Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 h 1
1. Edition

En

PES 6 P 110 A 720/3 RS 356 RQV 300/600-1050 PA 367 KR
Komb.-Nr. 0 402 036 028 PLE-MaB = 0,740"-0,820"

supersedes -
company MACK
engine ET 673 DOM

Note VDT-I-MAC 002!
Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,85) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,5+0,1	17,8-18,0	0,6			
300	6.6-6,2	0,7-1,7	0,6			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min / Control rod travel mm 2	Control rod travel mm rev/min 2a / 1a	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6 ④	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9 ③	Sliding sleeve travel ① rev/min 10	mm 11
max.	1050	16,2-17,8	-	-	-	ca.18,5	250	9,8-11,3	300	0,9-2,0
ca.63	11,5	1090-1100					300	7,9-8,1	380	
	4,0	1175-1205					400	3,8-5,2	570	3,1-3,6
	1280	0 - 1,0					650-710	= 2,0	810	4,7-5,4
						3a			1050	7,8

Torque control travel a * mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation: intermediate speed 2b / 4a rev/min 3	Fuel delivery characteristics 5a high idle speed 5b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
1000	177,5-179,5	1090-1100*	750	170,5-173,5	100	110,0-170,0 = ca.21 mm RW	1050	12,4+0,1
							1000	12,5
			600	153,0-156,0 PLE			750	12,6+0,1
							600	11,8+0,1
			300	98,0-106,0			500	11,2+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 m 2
1. Edition
En

PES 6 P 110 A 720/3 RS 3045 US-RQV 300/600-1050 PA 456 KR supersedes -
Komb.-Nr. 9 400 231 029 PLE-MaB 0,740" - 0,820" company MACK
engine ETZ 673
260 PS

Note VDT-I-MAC 002!
Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,9+0,1	16,9-17,1	0,4			
300	5,5-5,7	1,1-2,1	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	Control rod travel mm 2	rev/min mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1050	16,2-17,8	-	-	-	ca.18,5	250	9,8-11,3	-	-
ca.63,5	11,9 4,0 1250	1090-1100 1175-1205 0 - 1,0				(3a)	300 400 650-710	7,9-8,1 3,8-5,2 = 2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1000	169,0-171,0	1090-1100*	750	169,5-172,5	100	110,0-170,0	1050	12,9+0,1
							1000	12,9+0,1
			600	149,5-152,5 PLE			900	12,9+0,1
							750	12,9+0,1
							600	12,9+0,1
			300	101,0-109,0			500	11,6+0,1

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 k 2 **40**
1. Edition

En

PES 6 P 110 A 720/3 RS 3036 US-RQV 300/600-1050 PA 520 K supersedes -
Komb.-Nr. 9 400 231 049 PLE-Maß = 0,740"-0,820" company MACK
engine ETSZ 676
285 PS

Note VDT-I-MAC 002!
Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	13,6+0,1	20,9-21,1	0,4			
300	5,0-5,2		0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1070	16,2-17,8	-	-	-	ca.17,5 ③a	250	9,4-11,0	-	-
ca.63	12,6 4,0 1230	1090-1100 1170-1200 0 - 1,0					300 400 685-745	7,9-8,1 3,8-5,2 = 2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
1000	209,0-211,0	1090-1100	800	211,5-214,5	100	110,0-170,0	1050	13,5+0,1
							1000	13,6
			600	241,0-244,0			900	13,6+0,1
				PLE			800	14,0+0,1
			300	129,0-137,0			600	15,3+0,1
							500	15,2+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

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Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 m 4
1. Edition
En

PES 6 P 110 A 720/3 RS 3045 US-RQV 300/600-1050 PA 463 K
Komb.-Nr. 9 400 231 035 PLE-Maß 0,740"-0,820"

supersedes –
company MACK
engine ETZ 675

Note VDT-I-MAC 002!
Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0+0,1	15,4-15,6	0,4			
300	5,5-5,7	1,1-2,1	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1050	16,2-17,8	-	-	-	ca.18,5	250 300	9,8-11,3 7,9-8,1	-	-
ca.63	11,0 4,0 1250	1090-1100 1165-1195 0 - 1,0				(3a)	400 670-730	3,8-5,2 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1000	154,0-156,0	1090-1100 *	800	170,5-173,5	100	110,0-170,0	1050	11,9+0,1
							1000	12,0
			600	198,0-201,0			800	12,6+0,1
				PLE			700	13,4+0,1
			300	110,0-118,0			600	14,1+0,1
							500	14,0+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

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Test Specifications Fuel Injection Pumps and Governors ①

VDT-WPP 001/4 MAC 11,0 i 3
1. Edition

En

PES 6 P 110 A 720/ RS 3036 RQV 300/450-900 PA 400 KR
Komb.-Mr. 9 400 231 002 PLE-Maß = 0,740" - 0,820"
Note VDT-I-MAC 002!
Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

supersedes -
company: MACK
engine ETAZ 673 c DOM

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,4-2,5 (2,35-2,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	14,4+0,1	21,0-21,2	0,4			
300	5,0-5,2	1,3-2,3	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	970	16,2-17,8	ca.18,5	250	9,8-11,3	-	-	-	250	0,2-1,2
ca.57	13,4 4,0 1200	940-950 1075-1105 0 - 1,0		300 400 575+635 = 2,0	7,9-8,1 3,8-5,2	(3a)			480 710 950	3,8-4,3 5,5-5,9 8,2

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
900	213,0-215,0	940-950*	725	220,5-223,5	100	110,0-170,0	900	14,4
			600	197,5-200,5			725	14,6
				PLE			600	13,6+0,1
			300	99,0-107,0			500	13,2+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

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BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps and Governors

(1) VDT-WPP 001/4 MAC 11,0 z 1
1. Edition

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En

US-PES 6 P 110 A 720 RS 6005 US-RQV 300/400-900 PA 575-1K supersedes -
Komb.-Nr. 9 400 231 137 PLE-Maß = 0,740" - 0,820" company MACK
Note VDT-I-MAC 002! engine E 6 - 315 R
Values only apply to test nozzle-and-holder assembly 0 681 343 009 315 PS
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,4-2,5 (2,35-2,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	14,7+0,1	23,3-23,5	0,4			
300	5,1-5,3	1,3-2,3	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1020	15,2-17,8	-	-	-	ca.19 (3a)	250	9,4-10,8	-	-
ca.61	13,7 4,0 1130	940-950 1070-1100 0 - 1,0					300 400 530-590	7,9-8,1 3,3-4,7 = 2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
900	232,5-234,5	940-950 *	725	244,0-247,0	100	110,0-170,0	900	14,6
							800	14,9+0,1
			650	229,5-232,5			725	14,9+0,1
				PLE			650	14,3+0,1
			800	108,0-116,0			500	13,2+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 r
1. Edition

En

US-PES 6 P 110 A 720/3 RS 6003 US-RQV 300/600-1050PA542K supersedes -
Komb.-Nr. 9 400 231 059 PLE-Maß = 0,740" - 0,820" company MACK
Note VDT-I-MAC 002! engine EM 6 - 237
Values only apply to test nozzle-and-holder assembly 0 681 343 009 235 PS
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 (3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,3+0,1	17,6-17,8	0,4			
300	5,2-5,4	1,1-2,1	0,4			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1125	15,2-17,8	-	-	-	ca.21 (3a)	250 300	9,5-11,0 7,9-8,1	-	-
ca.61	11,3 4,0 1230	1090-1100 1170-1200 0 - 1,0					400 700-760	3,8-5,2 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1000	175,5-177,5	1090-1100*	800	180,5-183,5	100	110,0-170,0	1050	12,3+0,1
							1000	12,3
			600	199,5-202,5			800	12,7+0,1
				PLE			700	13,0+0,1
			300	106,0-114,0			600	13,5+0,1
							500	13,1+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

3.83

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Test Specifications Fuel Injection Pumps and Governors

VDT-WPP 001/4 MAC 11,0 u
1. Edition

40

En

PES 6 P 110 A 720/3 RS 6002 US-RQV 300/500-950 PA 548 K
Komb.-Nr. 9 400 231 065 PLE-Maß = 0,740" - 0,820"

supersedes -
company: MACK
engine: E 6 - 315
315 PS

Note VDT-I-MAC 002!
Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,4-2,5 (2,35-2,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	14,7+0,1	23,2-23,4	0,4			
300	5,1-5,3	1,4-2,4	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1020	15,2-17,8	-	-	-	ca.19	250	9,4-10,8	-	-
							300	7,9-8,1		
ca.63	13,7	990-1000					400	3,3-4,7		
	4,0	1110-1140								
	1180	0 - 1,0				(3a)	535-595	=2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
900	232,0-234,0	990-1000 *	725	244,0-247,0	100	110,0-170,0	950	14,6+0,1
							900	14,7
			650	226,5-229,5			800	14,9+0,1
				PLE			725	14,9+0,1
			300	107,5-115,5			650	14,3+0,1
							500	13,2+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 r 2
1. Edition
En

US-PES 6 P 110 A 720/3 RS 6003 US-RQV 300/600-1050PA559K supersedes -
Komb.-Nr. 9 400 231 073 PLE-Maß = 0,740" - 0,820" company MACK
Note VDT-I-MAC 002! engine: EME 6 - 285
Values only apply to test nozzle-and-holder assembly 0 681 343 009 285 PS
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes →	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,7+0,1	20,6-20,8	0,4			
300	4,8-5,0	1,2-2,2	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1120	15,2-17,8	-	-	-	ca.20	250	9,5-11,0	-	-
ca.61,5	11,7	1090-1100					300	7,9-8,1		
	4,0	1185-1215					400	4,0-5,4		
	1240	0 - 1,0				(3a)	710-770	=2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1000	206,0-208,0	1090-1100*	800	208,5-211,5	100	110,0-170,0	1050	12,6+0,1
							1000	12,7
			600	228,5-231,5			800	13,1+0,1
				PLE			700	13,5+0,1
			300	105,0-113,0			600	13,8+0,1
							500	13,4+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Test Specifications Fuel Injection Pumps and Governors ①

VDT-WPP 001/4 MAC 11,0 i
1. Edition
En

PES 6 P 110 A 720/3 RS 3036 RQV 300/450-950 PA 369 KR
Komb.-Nr. 0 402 036 703 PLE-Maß = 0,740"-0,820"
Note VDT-I-MAC 002!
Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

supersedes -
company MACK
engine ETAZ 673 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,4-2,5 (2,35-2,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	15,9+0,1	23,2-23,4	0,4			
300	5,6-5,8	1,5-2,5	0,4			

Adjust the fuel delivery from each outlet according to the values in [ ]

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	970	16,2-17,8	-	-	-	ca.18,5	250	9,8-11,3	250	0,2-1,2
ca.63	14,9 4,0 1100	990-1000 1115-1145 0 - 1,0				(3a)	300 400 576-635	7,9-8,1 3,8-5,2 =2,0	480 710 950	3,8-4,3 5,5-5,9 8,2

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
900	231,5-233,5	990-1100*	725	231,5-234,5	100	110,0-170,0 = ca. 12,0 mm RW	950	15,8+0,1
			600	105,5-108,5 PLE			900	15,9
							725	16,0+0,1
							700	15,9+0,1
							600	max. 15,2
			300	103,5-111,5			500	14,7+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

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BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps and Governors

(1) VDT-WPP 001/4 MAC 11,0 w

1. Edition

En

PES 6 P 110 A 720/3 RS 6005 US-RQV 300/600-1050 PA 586 K supersedes -
Komb.-Nr. 9 400 231 087 PLE-Maß = 0,740" - 0,820" company: MACK
Note VDT-I-MAC 002! engine EM 6 - 285
Values only apply to test nozzle-and-holder assembly 0 681 343 009 285 PS
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	13,3+0,1	21,0-21,2	0,4			
300	4,9-5,1	1,2-2,2	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1120	15,2-17,8	-	-	-	ca.20	250	9,8-11,3	-	-
ca.62	12,3 4,0 1240	1090-1100 1185-1215 0 - 1,0				(3a)	300 400 690-750	7,9-8,1 3,8-5,2 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1000	210,0-212,0	1090-1100 *	800	213,0-216,0	100	110,0-170,0	1050 1000	13,1+0,1 13,3
			600	240,0-243,0 PLE			900 800 600	13,4+0,1 13,6+0,1 14,8+0,1
			300	132,5-140,5			500	14,7+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

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Test Specifications Fuel Injection Pumps and Governors

40

VDT-WPP 001/4 MAC 11,0 x
1. Edition

En

PES 6 P 110 A 720 RS 6006 US-RQV 300/600-1050 PA 587 K supersedes -
Komb.-Nr. 9 400 231 089 PLE-Maß = 0,740" - 0,820" company MACK
Note VDT-I-MAC 002! engine: EM 6 - 237
Values only apply to test nozzle-and-holder assembly 0 681 343 009 224 PS
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 (3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,4+0,1	17,6-17,8	0,4			
300	5,3-5,5	1,1-2,1	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1125	15,2-17,8	-	-	-	ca.21	250	9,5-11,0	-	-
ca.61	11,4 4,0 1230	1090-1100 1170-1200 0 - 1,0				(3a)	300 400 700-760	7,9-8,1 3,8-5,2 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1000	175,5-177,5	1090-1100 *	800	180,5-183,5	100	110,0-170,0	1050	12,3+0,1
							1000	12,4
			600	200,0-203,0			800	12,7+0,1
				PLE			700	13,1+0,1
			300	106,5-11?,5			600	13,4+0,1
							500	13,2+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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Test Specifications Fuel Injection Pumps and Governors

① VDT-WPP 001/4 MAC 11,0 x 1

1. Edition

En

US-PES 6 P 110 A 720 RS 6006 US-RQV300/600-1050 PA 621 K supersedes -
Komb.-Nr. 9 400 231 101 PLE-Maß = 0,740"-0,820" company MACK
Note VDT-I-MAC 002! engine EM 6 - 250
Values only apply to test nozzle-and-holder assembly 0 681 343 009 250 PS
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,5±0,1	18,6-18,8	0,4			
300	4,5-4,7	1,1-2,1	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1125	15,2-17,8	-	-	-	ca.20 (3a)	250	9,5-11,0	-	-
ca.60,5	10,5 4,0 1230	1090-1100 1170-1200 0 - 1,0					300 400 700-760	7,9-8,1 3,8-5,2 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2) rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a) rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6) rev/min 6	cm³/1000 strokes 7	Torque-control travel (5) rev/min 8	Control rod travel mm 9
1000	185,5-187,5	1090-1100 *	850	197,5-200,5	100	110,0-170,0	1050	11,4±0,1
							1000	11,5
			630	209,5-212,5 PLE			850	11,8±0,1
							750	12,0±0,1
			500	146,5-154,5			630	12,6±0,1
							500	12,2±0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Test Specifications Fuel Injection Pumps and Governors

VDT-WPP 001/4 MAC 11,0 r 3 **40**
1. Edition

En

US-PES 6 P 110 A 720/3 RS 6003 US-RQV 300/600-1050PA593K supersedes -
Komb.-Nr. 9 400 231 097 PLE-Maß = 0,740"-0,820" company. MACK
Note VDT-I-MAC 002! engine EM 6 - 250
Values only apply to test nozzle-and-holder assembly 0 681 343 009 250 PS
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,5+0,1	18,7-18,9	0,4			
300	5,2-5,4	1,1-2,1	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1125	15,2-17,8	-	-	-	ca.20	250	9,5-11,0	-	-
ca.60,5	10,5 4,0 1230	1090-1100 1170-1200 0 - 1,0				(3a)	300 400 700-760	7,9-8,1 3,8-5,2 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1000	186,5-188,5	1090-1100 *	850	189,0-192,0	100	110,0-170,0	1050	11,4+0,1
							1000	11,5
			630	211,5-214,5			850	11,8+0,1
				PLE			750	12,0+0,1
			800	143,0-151,0			630	12,6+0,1
							500	12,2+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung

A1

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Test Specifications Fuel Injection Pumps and Governors

(1) 1. Edition

En

US-PES 6 P 110 A 720 RS 6006 US-RQV 300/600-1050PA621-4K supersedes -
Komb.-Nr. 9 400 231 159 PLE-Maß = 0,740"-0,820" company MACK
Note VDT-I-MAC 002! engine EME 6 - 300
Values only apply to test nozzle-and-holder assembly 0 681 343 009 300 PS
and fuel-injection test tubing 1 680 750 015

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	14,0+0,1	21,6-21,8	0,4			
300	5,9-6,1	1,7-2,7	0,4			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1120	15,2-17,8	-	-	-	ca.20	250	9,8-11,3	-	-
ca.63	13,0 4,0 1255	1090-1100 1190-1220 0 - 1,0				(3a)	300 400 690-750	7,9-8,1 3,8-5,2 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1050	215,5-217,5	1090-1100 *	850	214,5-217,5	100	110,0-170,0	1050	14,0
							950	14,0+0,1
			630	233,5-236,5			850	14,1+0,1
				PLE			750	14,5+0,1
			800	120,0-128,0			630	14,9+0,1
							500	14,4+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

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Test Specifications Fuel Injection Pumps and Governors ①

US-PES 6 P 110 A 720/3 RS 6006 US-RQV 300/600-950PA621-6K supersedes -
Komb.-Nr. 9 400 231 169 PLE-Maß = 0,740" - 0,820" company MACK
Note VDT-I-MAC 002! engine EME 6 - 300 R
Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 ~~(3,15-3,35)~~ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
950	14,2+0,1	21,8-22,0	0,4			
300	5,5-5,7	2,0 - 2,3	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 1a / 2a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 4 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3 9	Sliding sleeve travel 1: rev/min 10	mm 11
max.	1020	15,2-17,8	-	-	-	ca.20	250	9,8-11,3	-	-
ca.62	13,2 4,0 1155	990-1000 1100-1130 0 - 1,0				3a	300 400 590-650	7,9-8,1 3,3-4,7 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2: rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation 2b intermediate speed 4a: rev/min 3	Fuel delivery characteristics 5a high idle speed 5b: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery 6 idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel 5: rev/min 8	Control rod travel mm 9
950	217,5-219,5	990-1000	850	215,0-218,0	100	110,0-170,0	950	14,2
							850	14,3+0,1
			630	239,5-242,5			750	14,7+0,1
				PLE			630	15,1+0,1
			800	115,0-123,0			500	14,6+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 x 3
1. Edition

En

US-PES 6 P 110 A 720 RS 6006 US-RQV 300/600-1050PA621-2K supersedes -
Komb.-Nr. 9 400 231 155 PLE-Maß = 0,740"-0,820" company: MACK
engine: EME 6 - 250
250 PS

Note VDT-I-MAC 002!
Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	11,9+0,1	18,9-19,1	0,4			
300	6,3-6,5	1,4-2,4	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1120	15,2-17,8	-	-	-	ca.20	250	9,8-11,3	-	-
ca.62	10,9 4,0 1240	1090-1100 1165-1195 0 - 1,0				(3a)	300 7,9-8,1 400 3,8-5,2 690-750 =2,0			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1050	188,5-190,5	1090-1100 *	850	197,5-200,5	100	110,0-170,0	1050	11,9
							950	11,9+0,1
			630	210,5-213,5 PLE			850	12,0+0,1
							750	12,2+0,1
			800	134,0-142,0			630	12,6+0,1
							500	12,2+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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Test Specifications Fuel Injection Pumps (1) and Governors

VDT-WPP 001/4 MAC 11,0 w 1
1. Edition
En

US-PES 6 P 110 A 720 RS 6005 US-RQV 300/600-1050PA586-2K
Komb.-Nr. 9 400 231 131 PLE-Maß 0,740"-0,820"

supersedes -
company MACK
engine EM 6 - 285
285 PS

Note VDT-I-MAC 002!
Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	13,4+0,1	21,2-21,4	0,4			
300	4,9-5,1	1,2-2,2	0,4			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1120	15,2-17,8	-	-	-	ca.20 (3a)	250	9,8-11,3	-	-
ca.62	12,4 4,0 1240	1090-1100 1185-1215 0 - 1,0					300 400 690-750	7,9-8,1 3,8-5,2 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1000	211,5-213,5	1090-1100 *	800	213,0-216,0	100	110,0-170,0	1050	13,3+0,1
							1000	13,4
			600	242,0-245,0			800	13,8+0,1
				PLE			700	14,5+0,1
			800	147,0-155,0			600	14,9+0,1
							500	14,9+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 j 1 **40**
1. Edition

En

US-PES 6 P 110 A 720/3 RS 6009 US-RQV 300/500-1050PA543-2K supersedes -
Komb.-Nr. 9 400 231 149 PLE-Maß = 0,740"-0,820" company MACK
engine EE - 260
260 PS

Note VDT-I-MAC 002!
Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	12,0+0,1	16,6-16,8	0,4			
300	6,0-6,2	1,1 - 2,1	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1120	15,2-17,8	-	-	-	ca.20,5	250	9,8-11,3	-	-
ca.61,5	11,0 4,0 1225	1090-1100 1165-1195 0 - 1,0				(3a)	300 400 690-750	7,9-8,1 3,8-5,2 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1050	166,0-168,0	1090-1100 *	750	171,5-174,5	100	110,0-170,0	1050	12,0
							1000	12,0+0,1
			600	159,5-162,5			900	12,1+0,1
				PLE			750	12,2+0,1
			800	123,0-131,0			600	11,5+0,1
							500	11,3+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 i 7
1. Edition
En

PES 6 P 110 A 720/3 RS 3036 US-RQV 300/450-950 PA 521 K
Komb.-Nr. 9 400 231 051 PLE-Maß = 0.740"-0,820"
Note VDT-I-MAC 002!
Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

supersedes -
company: MACK
engine ETSZ 673 A
315 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,4-2,5 (2,35-2,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	14,7+0,1	22,7 - 22,9	0,4			
300	4,8-5,0	1,3-2,3	0,4			

Adjust the fuel delivery from each outlet according to the values in [ ]

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	970	16,2-17,8	-	-	-	ca.18	250	9,7-11,2	-	-
ca.63	13,7 4,0 1200	990-1000 1100-1130 0 - 1,0				(3a)	300 400 590-650	7,9-8,1 4,0-5,5 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
900	227,0-229,0	990-1000 *	725	235,5-238,5	100	110,0-170,0	950	14,6+0,1
							900	14,7
			650	219,0-222,0			725	14,9+0,1
				PLE			700	14,8+0,1
			300	103,0-111,0			650	14,3+0,1
							500	13,3+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

A20

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 x 4
1. Edition
En

US-PES 6 P 110 A 720 RS 6006 US-RQV 300/600-1050PA621-3K
Komb.-Nr. 9 400 231 157 PLE-Maß = 0,740"-0,820"
Note VDT-I-MAC 002!
Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

supersedes -
company MACK
engine EME 6 - 300
300 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	14,0+0,1	21,3-21,5	0,4			
300	5,9-6,1	1,7-2,7	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1120	15,2-17,8	-	-	-	ca.20	250	9,8-11,3	-	-
ca.63	13,0 4,0 1255	1090-1100 1190-1220 0 - 1,0				(3a)	300 400 690-750	7,9-8,1 3,8-5,2 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1050	212,5-214,5	1090-1100 *	850	210,0-213,0	100	110,0-170,0	1050	14,0
							950	14,0+0,1
			630	235,0-238,0			850	14,1+0,1
				PLE			750	14,6+0,1
			800	128,0-136,0			630	15,2+0,1
							500	14,6+0,1

Checking values in brackets

* 1 mm less control rod travel than col 2

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A21

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 v
1. Edition
En

US-PES 6 P 110 A 720 RS 6006 US-RQV 300/600-950 PA621-8K
Komb.-Nr. 9 400 231 173 PLE-Maß = 0,740"-0,820"
Note VDT-I-MAC 002!
Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

supersedes -
company MACK
engine EME 6 - 250 R
250 PS

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
950	11,7+0,1	18,1-18,3	0,4			
300	5,2-5,4	1,8-2,8	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1020	15,2-17,8	-	-	-	ca.18 (3a)	250 300	9,8-11,3 7,9-8,1	-	-
ca.61	10,7 4,0	990-1000 1065-1095					400 590-650	3,3-4,7 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
950	181,0-183,0	990-1000 *	850	183,5-186,5	100	110,0-170,0	950	11,7
							850	11,9+0,1
			630	199,5-202,5			750	12,2+0,1
				PLE			630	12,8+0,1
			800	115,0-123,0			500	12,1+0,1

Checking values in brackets

* 1 mm less control rod travel than col 2

3.83

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Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 10,8 b
1. Edition

40

En

PES 6 P 110 A 720/3 RS 357 RQV 300/600-1050 PA 382 KR
Komb.-Nr. 0 402 036 034 PLE-Maß = 0,740"-0,820"

supersedes -
company: MACK
engine: ENDT 675 DOM

Note VDT-I-MAC 002!
Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,1+0,1	14,9-15,1	0,4			
300	5,0-5,2	0,8-1,8	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1050	16,2-17,8	-	-	-	ca.18	250	9,8-11,3	-	-
ca.63	11,1 4,0 1230	1090-1100 1160-1190 0 - 1,0				③a	300 400 650-710	7,9-8,1 3,8-5,2 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
1000	148,5-150,5	1090-1100 *	800	166,0-169,0	100	110,0-170,0 = ca.21,0 mm RW	1000	12,1
			600	182,5-185,5 PLE			800	12,6+0,1
			300	117,5-125,5			600	13,4+0,1
							500	max. 13,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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A23

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 i 1
1. Edition

En

PES 6 P 110 A 720/3 RS 3036 RQV 300/450-950 PA 372 KR
Komb.-Nr. 0402 036 711 PLE-Maß = 0,740"-0,820"
Note VDT-I-MAC 002!
Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

supersedes -
company MACK
engine ETAY 673 A

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,4-2,5 (2,35-2,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	15,2+0,1	23,3 - 23,5	0,4			
300	5,0-5,2	1,3-2,3	0,4			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
ca.69,5	970 1050 1100 1200	15,5-18,0 7,0-11,6 1,7- 7,8 0	-	-	-	ca.19,5 (3a)	250 300 450 600 700 760	9,8-11,3 7,5- 8,5 3,2- 4,8 1,3- 2,5 0 - 0,8 0	-	-

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
900	233,0-235,0	990-1000 *	725	237,0-240,0	100	110,0-170,0 = ca.12,0 mm RW	900 725	15,2 15,4
			600	219,0-222,0 PLE			600	14,6
			300	104,0-112,0			500	14,0

Checking values in brackets

* 1 mm less control rod travel than col 2

3.83

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Test Specifications Fuel Injection Pumps and Governors

(1) VDT-WPP 001/4 MAC 11,0 j 2
1. Edition

40

En

US-PES 6 P 110 A 720/3 RS 6009 US-RQV 300/600-1050PA543K supersedes -
Komb.-Nr. 9 400 231 061 PLE-Maß = 0,740"-0,820" company MACK
Note VDT-I-MAC 002! engine E 6 - 250
Values only apply to test nozzle-and-holder assembly 0 681 343 009 250 PS
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,9+0,1	16,8-17,0	0,4			
300	6,2-6,4	1,1-2,1	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel (1a) mm rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1125	15,2-17,8	-	-	-	ca.20,5	250	9,5-11,0	-	-
ca.61	11,9 4,0 1225	1090-1100 1170-1200 0 - 1,0				(3a)	300 400 700-760	7,9-8,1 3,9-5,3 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2) rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a) rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel (5) rev/min 8	Control rod travel mm 9
1000	169,0-171,0	1090-1000 *	750	169,5-172,5	100	110,0-170,0	1050	12,9+0,1
							1000	12,9
			650	155,5-158,5			900	12,8+0,1
				PLE			750	12,8+0,1
			300	101,0-109,0			650	12,3+0,1
							500	11,7+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

B1

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 r 1
1. Edition
En

US-PES 6 P 110 A 720/3 RS 6003 US-RQV 300/600-1050FA557 supersedes -
Komb.-Nr. 9 400 231 069 PLE-Maß = 0,740"-0,820" company MACK
Note VDT-I-MAC 002! engine EME 6 - 237
Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,4+0,1	16,3-16,5	0,4			
300	5,3-5,5	1,2-2,2	0,4			

Adjust the fuel delivery from each outlet according to the values in [ ]

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1125	15,2-17,8	-	-	-	ca.20,5	250	9,5-11,0	-	-
ca.60,5	10,4 4,0 1230	1090-1100 1170-1200 0 - 1,0				(3a)	300 400 700-760	7,9-8,1 3,8-5,2 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1000	162,5-164,5	1090-1100*	800	173,0-176,0	100	110,0-170,0	1050	11,3+0,1
							1000	11,4
			600	192,0-195,0			800	11,8+0,1
				PLE			700	12,4+0,1
			300	125,5-133,5			600	12,7+0,1
							500	12,3+0,1

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAC 10,9 a
1. Edition

En

US-PES6P120A720RS6008-1 US-RQV300/500-975PA591-1K

supersedes –
company: Mack
engine: EE 6 - 350
350 PS

PLE-Maß = 0,740" - 0,820"
See Service Information VDT-I-MAC 002! Komb. - Nr. 9 400 231 147

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2 -3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
975	14,4+0,1	26,7 - 26,9	0,4			
300	5,8-6,0	1,3 - 2,3	0,4			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1080	15,2-17,8	–	–	–	ca. 20 (3a)	250	9,8-11,3	–	–
ca. 59	13,2 4,0 1200	1015-1025 1140-1170 0 - 1,0					300 400 690-750	7,9-8,1 3,8-5,2 = 2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
975	267,0-269,0	1015-1025 *	700	275,0-278,0	100	125,0-135,0	975	14,4
							900	14,4+0,1
			650	264,5-267,5			800	14,4+0,1
				PLE			700	14,5+0,1
			800	145,5-153,5			650	14,1+0,1
							500	13,0+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

3.83

B3

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

B3

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAC 10,9 a 1
En 1. Edition

US-PES6P120A720RS6008-1 US-RQV300/500-975PA591-2K supersedes –

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

company: Mack

engine. EE 6 - 350 350 PS

PLE-Maß = 0,740" - 0.820"

See Service Information VDT-I-MAC 002!

Komb. - Nr. 9 400 231 165

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2 -3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
975	14,4+0,1	26,7 - 26,9	0,4			
300	5,4-5,6	1,2 - 2,2	0,4			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1120	15,2-17,8	–	–	–	ca. 19	250	9,8-11,3	–	–
ca. 59	13,4	1015-1025					300	7,9-8,1		
	4,0	1140-1170					400	3,8-5,2		
	1200	0 - 1,0				③a	690-750	= 2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ Idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
975	266,5-268,5	1015-1025 *	700	273,0-276,0	100	125,0-135,0	975	14,4
							900	14,4+0,1
			650	265,0-268,0			800	14,4+0,1
				PLE			700	14,5+0,1
			800	144,5-152,5			650	14,1+0,1
							500	13,4+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 p
1. Edition
En

PES 6 P 110 A 720/3 RS 3036 RQV 300/600-900 PA 453 K
PLE-Maß = 0,740"-0,820"
Note VDT-I-MAC 002!
Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

supersedes -
company MACK
engine ETA 676 E
306 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,40-2,50 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	14,4+0,1	22,2-22,4	0,4			
300	5,5-5,7	1,3-2,3				

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	970	16,2-17,8	-	-	-	ca.18,5	100	min.10	300	1,2-2,1
							300	7,9-8,1	600	4,5-5,0
							400	3,8-5,2		
ca,54	13,4	940-950					570-630	=2,0	960	8,3
	4,0	1100-1130								
	1200	0 - 1,0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a) rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	1,6 bar		LDA	1,6 bar			900	14,4
900	222,0-224,0	940-950*	600	240,5-243,5	100	110,0-170,0	800	14,5+0,1
			LDA	0 bar			700	14,7+0,1
			600	141,5-144,5			600	15,2+0,1
				PLE			500	14,9+0,1
			300	103,0-111,0				

Checking values in brackets

* 1 mm less control rod travel than col. 2

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
3036 + 453K	Start 0,40-0,41	end 1,08-1,10	

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors ①

VDT-WPP 001/4 MAC 11,0 k 5
1. Edition

40

En

PES 6 P 110 A 720/3 RS 3036 US-RQV 300/600-1050 PA 482 K supersedes -
Komb.-Nr. 9 400 231 037 PLE-Maß = 0,740" - 0,820" company MACK
Note VDT-I-MAC 002! engine ETA 676 B
Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,4-2,5 (2,35-2,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	14,6+0,1	22,6-22,8	0,4			
300	5,3-5,5	0,8-1,8	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1e) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1070	16,2-17,8	ca.49	13,7 4,0	940-950 1115-1145	ca.18,5	250 300	9,8-11,3 7,9-8,1	-	-
ca.63	13,6 4,0 1270	1090-1100 1205-1235 0 - 1,0				(3a)	400 680-740	3,8-5,2 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1000	226,0-228,0	1090-1100 *	800	226,5-229,5	100	110,0-190,0	1050	14,6+0,1
							1000	14,6
			600	240,5-243,5			800	14,7+0,1
				PLE			700	14,8+0,1
			300	115,0-123,0			600	15,3+0,1
							500	15,0+0,1

Checking values in brackets

* 1 mm less control rod travel than col 2

3.83

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B7

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 10,8 a
1. Edition

En

PES 6 P 110 A 720/3 RS 357 RQV 275-1050 PA 381 KR

supersedes -
company: MACK
engine END 673 E (180 HP)

Note VDT-I-MAC 002!
Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9,5-9,6	9,6-9,8	0,4			
275	5,0	0,8-1,8				

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
ca.66	1050	15,0-17,8	-	-	-	ca.10	150	7,2-8,0	250	0,7-1,8
	1100	9,8-14,0					250	4,5-6,4	400	3,1-3,7
	1150	4,0- 9,6					400	2,4-3,6	900	6,0-6,4
	1260	0				(3a)	680	0	1050	8,3

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1000	95,5-97,5	1090-1100 *	700	109,0-113,0	100	140,0-170,0	1050	9,5+0,1
							900	9,7+0,1
					275	14,0- 24,0	800	9,9+0,1
							600	10,2+0,1
							500	9,9+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung.

B8

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 z
1. Edition
En

US-PES 6 P 110 A 720 RS 6005 US-RQV 300/500-950 PA548-2K supersedes -
Komb.-Nr. 9 400 231 133 PLE-Maß = 0,740"-0,820" company: MACK
Note VDT-I-MAC 002! engine. E 6 - 315
Values only apply to test nozzle-and-holder assembly 0 681 343 009 315 PS
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,4-2,5 (2,35-2,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	14,7+0,1	23,2-23,4	0,4			
300	5,1-5,3	1,4-2,4	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1020	15,2-17,8	-	-	-	ca.19	250	9,4-10,8	-	-
ca.63	13,7 4,0 1180	990-1000 1110-1140 0 - 1,0				③a	300 400 535-595	7,9-8,1 3,3-4,7 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ Idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
900	232,0-234,0	990-1000*	725	247,0-250,0	100	110,0-170,0	950	14,6+0,1
							900	14,7
			650	226,5-229,5			800	14,9+0,1
				PLE			725	14,9+0,1
			800	108,0-116,0			650	14,3+0,1
							500	13,2+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

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Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 k 3
1. Edition
En

PES 6 P 110 A 720/3 RS 3036 US-RQV 300/600-1050 PA 447 KR supersedes -
Komb.-Nr. 9 400 231 021 PLE-Maß = 0,740"-0,820" company MACK
Note VDT-I-MAC 002! engine ENDT 676
Values only apply to test nozzle-and-holder assembly 0 681 343 009 285 PS
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	14,1+0,1	22,6-22,8	0,4			
300	5,0-5,2	1,3-2,3	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1070	16,2-17,8	-	-	-	ca.18	250 300	9,8-11,3 7,9-8,1	-	-
ca.63	13,1 4,0 1280	1090-1100 1190-1220 0 - 1,0				(3a)	400 680-740	3,8-5,2 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1000	226,0-228,0	1090-1100 *	800	225,5-228,5	100	110,0-170,0	1050	14,1+0,1
							1000	14,1
							900	14,1+0,1
			600	240,0-243,0			800	14,4+0,1
				PLE			600	15,0+0+1
			300	130,0-138,0			500	14,6+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 i 4
1. Edition
En

PES 6 P 110 A 720/3 RS 3036 US-RQV 300/450-950 PA 446 KR
Komb.-Nr. 9 400 231 019 PLE-Maß = 0,740" - 0,820"
Note VDT-I-MAC 002!
Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

supersedes -
company: MACK
engine ETAY 673 A
315 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,4-2,5 (2,45-2,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	15,1+0,1	23,3 - 23,5	0,4			
300	5,0-5,2	1,4 - 2,4	0,4			

Adjust the fuel delivery from each outlet according to the values in [ ].

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	970	16,2-17,8	-	-	-	ca.18,5	250 300	9,8-11,3 7,9- 8,1	-	-
ca. 63	14,1 4,0 1210	990-1000 1120-1150 0 - 1,0				(3a)	400 575 - 635	3,8- 5,2 = 2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
900	233,0-235,0	990-1000 *	725	239,5-242,5	100	110,0-170,0	950	15,0+0,1
							900	15,1
			600	217,5-220,5			800	15,1+0,1
							725	15,2+0,1
				PLE			600	max.14,5
			300	106,0-114,0			500	13,7+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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B11

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 u 1
1. Edition
En

PES 6 P 110 A 720/3 RS 6002 US-RQV 300/400-900 PA 575 K
Komb.-Nr. 9 400 231 079 PLE-Maß = 0,740" - 0,820"

supersedes -
company: MACK
engine. E 6 - 315 R
315 PS

Note VDT-I-MAC 002!
Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,4-2,5 (2,35-2,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	14,7+0,1	23,2-23,4	0,4			
300	5,1-5,3	1,3-2,3	0,4			

Adjust the fuel delivery from each outlet according to the values in [ ]

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1020	15,2-17,8	-	-	-	ca.19	250	9,4-10,8	-	-
ca. 61	13,7 4,0 1130	940-950 1070-1100 0 - 1,0				(3a)	300 400 530-590	7,9-8,1 3,3-4,7 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
900	232,0-234,0	940-950 *	725	244,0-247,0	100	110,0-170,0	900	14,6
							800	14,9+0,1
			650	226,5-229,5			725	14,9+0,1
				PLE			650	14,3+0,1
			300	87,5-95,5			500	13,2+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 o 1
1. Edition
En

PES 6 P 110 A 720/3 RS 3064 US-RQV 300/600-1050 PA 532 K
Komb.-Nr. 9 400 231 055 PLE-Maß = 0,740" - 0,820 "

supersedes -
company: MACK
engine ETZ 675 (235 PS)

Note VDT-I-MAC 002!
Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 (3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,7+0,1	17,2-17,4	0,4			
300	5,5-5,7	1,1-2,1	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1120	15,2-17,8	-	-	-	ca.20 (3a)	250	9,8-11,3	-	-
ca.62,5	11,7 4,0 1260	1090-1100 1185-1215 0-1,0					300 400 690-750	7,9-8,1 3,8-5,2 = 2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2) rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a) rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6) rev/min 6	cm³/1000 strokes 7	Torque-control travel (5) rev/min 8	Control rod travel mm 9
1000	172,0-174,0	1090-1100*	800	178,5-181,5	100	110,0-170,0	1050	12,7+0,1
							1000	12,7
			600	197,5-200,5			800	13,1+0,1
				PLE			700	13,4+0,1
			300	113,0-121,0			600	13,9+0,1
							500	13,5+0,1

Checking values in brackets

* 1 mm less control rod travel than col 2

3.83

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Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 t 1
1. Edition
En

US-PES 6 P 110 A 720 RS 6004-1 US-RQV 300/600-1050 PA544-2K
Komb.-Nr. 9 400 231 145

supersedes -
company MACK
engine E 6 - 200 (200 PS)

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,0+0,1	12,6 - 12,8	0,4			
300	5,0-5,2	1,1 - 2,1	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1125	15,2-17,8	-	-	-	ca.21 (3a)	250	8,0-10,0	-	-
ca.60	9,0 4,0 1215	1090-1100 1155-1185 0 - 1,0					300 400 700-760	7,9-8,1 3,8-5,2 = 2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1000	126,0-128,0	1090-1100 *	750	121,0-124,0	100	110,0-170,0	1050	9,9+0,1
							1000	10,0
			650	120,5-123,5			900	9,9+0,1
							750	9,8+0,1
							650	9,6+0,1
							500	9,1+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 m
1. Edition
En

PES 6 P 110 A 720/3 RS 3045 RQV 300/600-1050 PA 405 KR
Komb.-Nr. 0 402 036 723 PLE-Maß = 0,740" - 0,820"

supersedes -
company. MACK
engine: ETY 675 DOM

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,6+0,1	15,4-15,6	0,4			
300	5,5-5,7	1,0 - 2,0	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1050	16,2-17,8	-	-	-	ca.18,5	250	9,8-11,3	300	0,9-2,0
ca. 63	11,6	1090-1100					300	7,9-8,1	380-570	3,1-3,6
	4,0	1170-1200					400	3,8-5,2	810	4,7-5,4
	1250	0 - 1,0				③a	550-710	=2,0	1050	7,8

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
1000	153,5-155,5	1090-1100 *	800	168,0-171,0	100	110,0-170,0	1000	12,6+0,1
							300	13,1+0,1
			600	191,0-194,0			700	13,7
				PLE			600	14,3+0,1
			300	105,0-113,0			500	14,2+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 h 2
1. Edition
En

PES 6 P 110 A 720/3 RS 356 RQV 300/600-1050 PA 420 KR
Komb.-Nr. 0 402 036 040

supersedes -
company MACK
engine ET 673 E DOM

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,8+0,1	12,3 - 12,5	0,4			
300	6,0-6,2	0,7 - 1,7	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever (3a) 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1050	16,2-17,8	-	-	-	ca.18,5	250	9,8-11,3	300	0,9-2,0
ca.61,5	9,8 4,0 1250	1090-1100 1160-1190 0 - 1,0					300 400 670-730	7,9-8,0 3,6-5,0 = 2,0	380- 570 810 1050	3,1-3,6 4,7-5,4 7,8

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1000	123,0-125,0	1090-1100 *	750	128,5-131,5	100	110,0-170,0	1000	10,8
			660	109,5-112,5			750	10,6+0,1
							700	10,3+0,1
							600	9,7+0,1
							500	9,3+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 m 1
1. Edition
En

PES 6 P 110 A 720/3 RS 3045 RQV 300/600-1050 PA 433 KR
Komb.-Nr. 9 400 231 015

supersedes -
company: MACK
engine: ETY 673 E
200 PS

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0+0,1	13,0 - 13,2	0,4			
300	5,5-5,7	1,0 - 2,0	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1050	16,2-17,8	-	-	-	ca.18,5 (3a)	250 300 400 670-730	9,8-11,3 7,9-8,1 3,8-5,2 =2,0	-	-
ca.62	11,0 4,0 1250	1090-1100 1160-1190 0 - 1,0								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1000	130,0-132,0	1090-1100 *	750	133,5-136,5	100	110,0-170,0	1050	12,0+0,1
							1000	12,0+0,1
			600	123,5-126,5			800	12,2+0,1
							750	12,2+0,1
							600	11,2+0,1
							500	11,2+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 10,8 a 1
1. Edition
En

PES 6 P 110 A 720/3 RS 357 RQV 275-1050 PA 380 KR
Komb.-Nr. 0 402 036 032
Note VDT-I-MAC 002!
Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

supersedes -
company: MACK
engine END 711

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,6+0,1	12,1-12,3	0,4			
275	5,0-5,2	0,8-1,8	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1050	15,0-17,8	-	-	-	ca.10	150	7,2-8,0	250	0,7-1,3
	1100	9,8-14,0					200	6,0-8,0	520	2,6-3,2
	1150	4,0-9,6					300	3,2-4,4	780	4,6-5,1
	1180	0 -7,0					400	2,4-3,6	1050	8,2
	1260	0					600	0 -1,2		
						(3a)	680	0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1000	119,5-121,5	1090-1100*	700	129,5-132,5	100	146,0-166,0 = ca.21,0 mm RW	1000	10,6
							900	10,6
							700	10,4
							500	10,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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Test Specifications Fuel Injection Pumps ① and Governors

40

VDT-WPP 001/4 MAC 11,0 h

1. Edition

En

PES 6 P 110 A 720/3 RS 356 RQV 300/600-1050 PA 368 KR

Komb.-Nr. 0 402 036 026

supersedes -

company MACK

engine ET 673 EXP.

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,5+0,1	17,8-18,0	0,4			
300	6,0-6,2	0,7 - 1,7	0,6			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1050	16,2-17,8	-	-	-	ca. 18,5	250	9,8-11,3	300	0,9-2,0
ca.63	11,5 4,0 1280	1090-1100 1175-1205 0 - 1,0				(3a)	300 400 650-710	7,9-8,1 3,8-5,2 =2,0	380-570 810 1050	3,1-3,6 4,7-5,4 7,8

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1000	177,5-179,5	1090-1100 *	750	170,5-173,5	100	110,0-170,0 = ca. 21,0 mm RW	1050	12,5+0,1
			600	153,0-156,0			600	11,8+0,1
							500	11,2+0,1
							750	12,6+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

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B19

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 i 5
1. Edition
En

PES 6 P 110 A 720/3 RS 3036 RQV 300/450-950 PA 448 KR
Komb.-Nr. 9 400 231 023 PLE-Maß = 0,740" - 0,820"

supersedes -
company MACK
engine ETAZ 673 A
315 PS

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,4-2,5 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	15,1+0,1	23,4-23,6	0,4			
300	5,0-5,2	1,3-2,3	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	970	16,2-17,8	-	-	-	ca. 18,5 (3a)	300 250 400 575-635	7,9-8,1 9,8-11,3 3,8-5,2 = 2,0	-	-
ca. 63	14,1 4,0 1200	990-1000 1115-1145 0 - 1,0								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
900	234,0-236,0	990-1000 *	725 600 300	241,5-244,5 219,5-222,5 PLE 108,0-116,0	100	110,0-170,0	950 900 800 725 600 500	15,0 15,1 15,1 15,2 max. 14,5 13,9

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 k 1
1. Edition
En

PES 6 P 110 A 720/3 RS 3036 RQV 300/600-1050 PA 364 KR
Komb.-Nr. 0 402 036 709 PLE-Maß = 0,740" - 0,820"

supersedes -
company: MACK
engine ETA 676

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	13,8 +0,1	21,0-21,2	0,4			
300	5,0-5,2	1,2 - 2,2	0,4			

Adjust the fuel delivery from each outlet according to the values in [ ]

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1070	16,2-17,8				ca.19	250	9,8-11,5	300	0,4-1,0
							300	7,2-9,0	400	1,0-1,6
ca.63	12,8	1090-1100					400	2,2-5,0	600	2,5-3,1
	4,0	1190-1220					800	0 -0,8	1130	8,5
	1280	0 - 1,0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1000	210,5-212,5	1090-1100 *	800	210,5-213,5	100	11,5 mm RW		
			600	228,0-231,0	300	17,0-23,0		
					1155	55,0-61,0		
				PLE	300	111,0-119,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

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B21

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 10,8 b 1
1. Edition
En

PES 6 P 110 A 720/3 RS 357 RQV 300/600-1050 PA 441 KR
Komb.-Nr. 9 400 231 017
Note VDT-I-MAC 002!
Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

supersedes -
company MACK
engine ENDT 675 DOM

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,1+0,1	14,8 - 15,0	0,4			
300	5,0-5,2	0,7 - 1,7	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1050	16,2-17,8	-	-	-	ca.18 (3a)	250	9,8-11,3	300	0,9-2,0
							300	7,9-8,1	380-570	3,1-3,6
ca.63	11,1	1090-1100					400	3,8-5,2		
	4,0	1160-1190					650-710	=2,0	810	4,7-5,4
	1230	0 - 1,0							1050	7,8

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a) rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1000	147,5-149,5	1090-1100*	800	165,5-168,5	100	110,0-170,0	1000	12,1
							800	12,5+0,1
			600	181,5-184,5			600	13,4+0,1
							500	max.13,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 m 3
1. Edition
En

PES 6 P 110 A 720/3 RS 3045 US-RQV 300/600-1050 PA 457 KR supersedes –
Komb.-Nr. 9 400 231 031

company MACK
engine ETZ 673 E
200 PS

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,8+0,1	13,2-13,4	0,4			
300	5,9-6,1	1,1 - 2,1	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1050	16,2-17,8	-	-	-	ca.18,5	250	9,8-11,3	-	-
ca.62	10,8 4,0 1225	1090-1100* 1160-1190 0 - 1,0				③a	300 400 670-730	7,9-8,1 3,8-5,2 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
1000	131,5-133,5	1090-1100 *	750	128,5-131,5	100	110,0-170,0	1050	11,8+0,1
							1000	11,8
			600	122,0-125,0			900	11,8+0,1
							750	11,9+0,1
							600	11,5+0,1
							500	11,0+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 t
1. Edition
En

US-PES 6 P 110 A 720/3 RS 6004 US-RQV 300/600-1050 PA 544K
Komb-Nr. 9 400 231 063

supersedes -
company MACK
engine E 6 - 200
200 PS

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,0+0,1	12,6 - 12,8	0,4			
300	5,0-5,2	0,8 - 1,8	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1120	15,2-17,8	-	-	-	ca.21 (3a)	250 300	8,0-10,0 7,9- 8,1	-	-
ca.60	9,0 4,0 1215	1090-1100 1160-1190 0 - 1,0					400 700-760	3,8-5,2 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1000	126,0-128,0	1090-1100 *	750	122,0-125,0	100	110,0-170,0	1050	9,9+0,1
							1000	10,0
			650	121,0-124,0			900	9,9+0,1
							750	9,8+0,1
							650	9,6+0,1
							500	9,1+0,1

Checking values in brackets

* 1 mm less control rod travel than col 2

3.83

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Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 o
1. Edition
En

PES 6 P 110 A 720/3 RS 3064 RQV 300/600-1050 PA 461 K supersedes -
Komb.-Nr. 0 402 036 725 PLE-Maß = 0,740" - 0,820" company MACK
Note VDT-I-MAC 002! engine ETZ 675
Values only apply to test nozzle-and-holder assembly 0 681 343 009 235 PS
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 (3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,7+0,1	17,2 - 17,4	0,4			
300	5,5-5,7	1,1 - 2,1	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1050	16,2-17,8	-	-	-	ca. 18,5 (3a)	250	9,8-11,3	-	-
ca. 63	11,7 4,0 1260	1090-1100 1175-1205 0 - 1,0					300 400 670-730	7,9-8,1 3,8-5,2 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2) rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a) rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6) rev/min 6	cm³/1000 strokes 7	Torque-control travel (5) rev/min 8	Control rod travel mm 9
1000	172,0-174,0	1090-1100 *	800	178,5-181,5	100	110,0-170,0	1050	12,7+0,1
							1000	12,7
			600	197,5-200,5 PLE			900	12,8+0,1
							700	13,4+0,1
			300	113,0-121,0			600	13,9+0,1
							500	13,5+0,1

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps and Governors

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VDT-WPP 001/4 MAC 11,0 v 2
1. Edition

En

US-PES 6 P 110 A 720 RS 6006 US-RQV 300/600-950 PA621-5K supersedes -
Komb.-Nr. 9 400 231 167 PLE-Maß = 0,740" - 0,820" company: MACK
Note VDT-I-MAC 002! engine EME 6 - 300 R
Values only apply to test nozzle-and-holder assembly 0 681 343 009 300 PS
and fuel-injection test tubing 1 680 750 015

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
950	14,0+0,1	20,9-21,1	0,4			
300	5,8-6,0	2,0 - 3,0	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever (3a) 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1020	15,2-17,8	-	-	-	ca.20	250	9,8-11,3	-	-
ca. 62	13,0 4,0 1155	990-1000 1100-1130 0 - 1,0					300 400 590-650	7,9-8,1 3,3-4,7 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2) rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a) rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6) rev/min 6	cm³/1000 strokes 7	Torque-control travel (5) rev/min 8	Control rod travel mm 9
950	209,0-211,0	990 - 1000*	850	210,0-213,0	100	120,0-180,0	950	14,0
							850	14,1+0,1
			630	236,5-239,5			750	14,6+0,1
				PLE			630	15,2+0,1
			800	117,0-125,0			500	14,7+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 i 6
1. Edition
En

PES 6 P 110 A 720/3 RS 3036 US-RQV 300/450-950 PA 513 K
Komb.-Nr. 9 400 231 047 PLE-Maß = 0,740" - 0,820"
Note VDT-I-MAC 002!
Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

supersedes -
company MACK
engine ETAZ 673 A
315 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,4-2,5 (2,35-2,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	15,1+0,1	23,1-23,3	0,4			
300	5,0-5,2	1,3-2,3	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	970	16,2-17,8	-	-	-	ca.20,5	250	10,1-10,5	-	-
ca.62,5	14,1 4,0 1210	990-1000 125-1155 0 - 1,0				(3a)	300 400 605-665=2,0	7,9-8,1 4,9-5,3		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2) rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a) rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6) rev/min 6	cm³/1000 strokes 7	Torque-control travel (5) rev/min 8	Control rod travel mm 9
LDA 900	0,7 bar 231,0-233,0	990-1000 *	LDA 725 LDA 600 300	0,7 bar 240,5-243,5 0,7 bar 219,0-222,0 PLE 103,0-111,0	100	110,0-170,0	950 900 725 700 600 500	15,0+0,1 15,1 15,2+0,1 15,1+0,1 max. 14,5 13,6+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 900 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PES6P..RS3036 +US-RQV..PA 513 K	0,36	0,53	13,8 – 13,9 14,8 – 15,0

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 10,8 c
1. Edition
En

PES 6 P 110 A 720/3 RS RQV 300/600-1050 PA 399 KR
Komb.-Nr. 0 402 036 038 PLE-Maß = 0,740"-0,820"
Note VDT-I-MAC 002!
Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

supersedes -
company MACK
engine ENDT 675 EXP

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,1+0,1	15,0 - 15,2	0,4			
300	5,0-5,2	0,8 - 1,8	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 1a 2a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 4 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3 9	Sliding sleeve travel 1 rev/min 10	mm 11
max.	1050	16,2-17,8	-	-	-	ca.18,5	250	9,8-11,3	300	0,9-2,0
							300	7,9-8,1	380-	
ca.63	11,1	1090-1100					400	3,8-5,2	570	3,1-3,6
	4,0	1160-1190					650-710	=2,0	810	4,7-5,4
	1230	0 - 1,0				3a			1050	7,8

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2: rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation 2b intermediate speed 4a: rev/min 3	Fuel delivery characteristics 5a high idle speed 5b: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery 6 idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control 5 travel: rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1090-1100*	LDA	0,7 bar	100	110,0-170,0	1050	12,1+0,1
1000	150,0-152,0		600	184,0-187,0			1000	12,1
			LDA	0 bar			900	12,3+0,1
LDA	0,7 bar		1000				800	12,6+0,1
800	167,5-170,5			134,5-137,5			700	13,1+0,1
				PLE			600	13,4+0,1
			300	115,0-123,0			500	max. 13,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PES 6 P..RS 357	0,36		11,5 - 11,6
+ RQV..PA 399 KR		0,49	11,9 - 12,1

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 1
1. Edition
En

PES 6 P 110 A 720/3 RS 3036 RQV 300/600-1050 PA 398 KR
Komb.-Nr. 0 402 036 721 PLE-Maß = 0,740" - 0,820"
Note VDT-I-MAC 002!
Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

supersedes -
company: MACK
engine ETA 676 EXP

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	13,9+0,1	21,1-21,3	0,4			
300	5,0-5,2	1,2-2,2	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1070	16,2-17,8	-	-	-	ca.18,5	250	9,8-11,3	300	0,6-1,8
ca. 63	12,9	1090-1100					300	7,9-8,1	390-580	3,1-3,6
	4,0	1190-1220					400	3,8-5,2	820	4,9-5,4
	1280	0 - 1,0				(3a)	680-740=2,0		1050	7,9

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 210,5-212,5	1090-1100*	LDA 600	0,7 bar 228,0-231,0	100	110,0-170,0 = ca.11,5 mm RW	1050	13,8+0,1
							1000	13,8
LDA 800	0,7 bar 210,5-213,5		LDA 1000	0 bar 187,0-190,0 PLE			900	13,8+0,1
							800	14,1+0,1
							600	14,8+0,1
			300	128,5-136,5			500	14,4+0,1

Checking values in brackets

* 1 mm less control rod travel than col 2

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BOSCH
Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

C7

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 300 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PES6P..R 3036 + RQV..PA 398 KR	0,36	0,49	13,1 – 13,2 13,5 – 13,7

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 q
1. Edition
En

PES 6 P 110 A 720/3 RS 6002 US-RQV 300/600-1050 PA 485 K
Komb.-Nr. 9 400 231 041 PLE-Maß = 0,740" - 0,820"
Note VDT-I-MAC 002!
Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

supersedes -
company: MACK
engine EM 6-285
285 PS

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,9+0,1	21,3 - 21,5	0,4			
300	5,4-5,6	1,8 - 2,8	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1120	15,2-17,8	-	-	-	ca.20	250	9,8-11,3	-	-
ca. 62	11,9	1090-1100					300	7,9-8,1		
	4,0	1185-1215					400	3,8-5,2		
	1240	0 - 1,0				(3a)	690-750	=2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1000	212,5-214,5	1090-1100 *	800	216,0-219,0	100	110,0-170,0	1050	12,8+0,1
							1000	12,9
			600	243,5-246,5			800	13,3+0,1
				PLE			700	14,0+0,1
			800	147,0-155,0			600	14,3+0,1
							500	14,3+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
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Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 k 4

1. Edition

En

PES 6 P 110 A 720/3 RS 3036 US-RQV 300/600-1050 PA 462 K supersedes -
Komb.-Nr. 9 400 231 033 PLE-Maß = 0,740" - 0,820" company: MACK
Note VDT-I-MAC 002! engine ETA 676 B
Values only apply to test nozzle-and-holder assembly 0 681 343 009 306 PS
and fuel-injection test tubing 1 680 750 015

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,4-2,5 (2,35-2,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	14,6+0,1	22,5-22,7	0,4			
300	5,3-5,5	1,3-2,3	0,4			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1070	16,2-17,8	-	-	-	ca. 18,5	250	9,8-11,3	-	-
ca.63	13,6 4,0 1270	1090-1100 1190-1220 0 - 1,0				(3a)	300 400 680-740	7,9-8,1 3,8-5,2 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1000	226,0-228,0	1090-1100*	800	227,0-230,0	100	110,0-170,0	1050	14,6+0,1
							1000	14,6
			600	240,5-243,5			800	14,7+0,1
							700	14,8+0,1
				PLE			600	15,3+0,1
			300	116,0-124,0			500	15,0+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

PE 8 P 120 A 320 LS 3807 RQ 300/1150 PA 511-2 En 10.82

supersedes: Daimler-Benz
company: OM 422 LA
engine: 276 kW (375 PS)

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45° ±0,5° (±0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke (3,95-4,15) mm (from BDC) Zyl. 8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	11,6+0,1	18,9 - 19,1	0,5(0,9)			
300	4,8-5,0	1,2 - 2,0	0,8(1,2)			
1150	11,6+0,1	C, Sp.1u. 2	0,75			
600	11,6+0,1	C, Sp.4u. 5	0,75			
500	10,1+0,1					

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,1 -20,8	600	19,9	10,6	1195-1210	300	4,3	100	min.6,0	-	-
				4,0	1250-1280			300	4,2-4,4		
								335-375	=2,0		

1195 - 1210 min⁻¹

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA	0,7 bar	-	LDA	0,7 bar	100	140,0 - 160,0
900	189,0 - 191,0 (186,0 - 194,0)		600	182,0 - 186,0 (179,0 - 189,0)		
LDA	0,7 bar		LDA	0 bar		
1150	185,0-189,0 (182,0-192,0)		500	139,0-141,0 (136,0-144,0)		

Checking values in brackets

1.83

CAA

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 8 P..LS 3807 + RQ..PA 511-2	0,44		11,1 - 11,3
		0,70	11,6 - 11,7
		0	10,1 - 10,2
		0,34	10,5 - 10,7

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 12,0 f1
2. Edition

En

PE 6 P 120 A 320 RS 3071 RQV 250-1025 PA 371

supersedes 2.81
company: Volvo
engine: TD 120 GA

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,6-2,7 (2,55-2,75) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,4+0,1	20,5-20,8	0,5(0,9)			
250	5,6-5,7	2,2-2,6	0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca.12	100	min.7,1	250	1,1-1,2
ca.40	10,4	1065-1075					250	5,6-5,7	500	2,9-3,3
	4,0	1145-1175							800	5,1-5,4
	1300	0 - 1,0							1025	7,2
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 700	0,9 bar 205,0-208,0 (202,0-211,0	1065-1075*	LDA 700	0 bar 157,0-161,0 (154,0-164,0)	100	230,0-270,0 =RW 20,0-21,0 mm	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.83

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

C13

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 6 P..RS 3071 +RQV.. PA 371	0,57	0,90 0 0,33	11,0-11,1 11,4-11,5 9,0-9,1 9,9-10,1

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 12,0 a
4. Edition

En

Testoil-ISO 4113

PES 6 P 120 A 320 RS 3070 RQV 250-1100 PA 495

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

supersedes 8.81
company: RVI
engine: MIDR 063540
223 kW (304 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,45-3,65) 3,50-3,60 mm (from BDC) = RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,9-13,0	19,4 - 19,7	0,5(0,8)			
250	5,2-5,4	1,5 - 2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1100 1400	15,2-17,8 0 - 1	-	-	-	ca.12	100 250	min.6,8 5,2-5,4	200 500 850 1150	0,3-0,6 3,0-3,2 5,0-5,2 8,4
ca. 66	11,9 4,0	1160-1170 1235-1265				290-400 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 194,0-197,0 (191,0-200,0)	1160-1170	LDA 1100	0 bar 151,0-154,0 (148,0-157,0)	100 100-170 (80-190)	130,0-165,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.83

C15

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PES 6 P..RS 3070 + RQV..PA 495	0,27	0,70 0 0,22	12,2 - 12,3 12,9 - 13,0 10,6 - 10,7 11,2 - 11,4

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

PES 6 P 120 A 420 RS 3063,Z RQ 200-1100 PA 279-1

supersedes –
company: Saurer
engine: D 3 KTUB
155 kW (211 PS)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	9,0-9,1	13,4-13,8	0,5(0,8)			
250	5,6-5,8	1,3-1,9	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	15,6-16,4	550	16,0	8,0 4,0 1350	1145-1160 1180-1210 0-1,0	250	5,7	100 250 340-380	min. 7,1 5,6-5,8 =2,0	1100 910 860 550	9,0-9,1 9,1-9,3 9,2-9,6 9,5-9,6

Torque-control travel on flyweight assembly dimension a = 0,3 mm

Speed regulation: At 1145-1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm / cm³/1000 strokes 7
LDA 1100	0,7 bar 134,0-138,0 (131,0-141,0)	-	LDA 700 LDA 400	0,7 bar 143,0-147,0 (140,0-150,0) 0 bar 89,0-93,0 (86,0-96,0)	100	210,0-240,0

Checking values in brackets

C17

C17

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

SAU 12,0 e

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PES 6 P..RS3063,Z +RQ..PA 279-1	0,26	0,70 0 0,11	9,3-9,4 9,5-9,6 8,3-8,4 8,6-8,8

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

40

(1A) WPP 001/4 DAF 11,6 o 1
3. Edition
En

Testoil-ISO 4113

PE 6 P 120 A 320 RS 415 RSV 250-900P5/475

supersedes 8.81
company: DAF
engine: DKS-1160 E1160
206 kW (280 PS)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,90-3,00 (2,85-3,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
650	11,9-12,0	18,4 - 18,7	0,5 (0,9)			
250	6,7-6,9	1,9 - 2,3	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 0,3-1,0 x = 5,75			ca.24	250	6,3	900	11,4-11,6
							650	12,1-12,2
ca.46	940-950 =10,5				250	6,7-6,9		
(2a)	025-1055=4,0 200=0,3-1,7				395-455	= 2,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,7 bar	940-950 *	LDA	0,7 bar	100	310 - 350 = 19,5 - 21,0 mm RW	250	6,7
650	184,0 - 187,0 (181,0 - 190,0)		900	181,0-186,0 (178,0-189,0)				
			LDA 600	0 bar 129,0 - 132,0 (126,0 - 135,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

12.82

C19

C19

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 600 rev/min decreasing / increasing (XXXXXX) pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 6 P..RS 415 m. RSV..P5/475	0,7		11,9–12,0
		0,26	11,4–11,5
		0,12	10,0–10,6
		0	9,8–9,9

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

(1A)

WPP 001/4 DAF 11,6 o3
1. Edition
En

PE 6 P 120 A 320 RS 415-1 RSV 250-900 P 5/475

supersedes -
company DAF
engine DKS-E 1160
206 kW (280 PS)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers.

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 - 2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
650	11,9+0,1	18,4 - 18,7	0,5(0,9)			
250	6,7-6,9	1,9 - 2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 24	250	6,3	650	12,1-12,2
	x	= 5,0					250	6,7-6,9	900	11,4-11,6
ca. 46 (2a)	10,4	940-950					395-455	= 2,0		
	4,0	1025-1055								
	1200	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle: rev/min 6	cm³/1000 strokes (5) 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 650	0,7 bar 184,0-187,0 (181,0-190,0)	940-950*	LDA 900	0,7 bar 181,0-186,0 (178,0-189,0)	100	310,0-350,0 = 19,5 - 21,0 mm RW	250	6,8
			LDA 600	0 bar 129,0-132,0 (126,0-135,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

12.82

C21

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE6P .. RS 415-1 + RSV .. P 5/475	0,27	0,70 0 0,12	11,4 - 11,5 11,9 - 12,0 9,8 - 9,9 10,0 - 10,6

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 BET 8,8 b
2. Edition
En

PE 6 P 120 A 320 RS 377 RQV 250-1200 PA 425 R

supersedes 2.82
company RVI
engine: MIDS 062 030
158 kW (215 PS)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2.8-2.9 (2,75-2.95) mm (from BDC) = RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	12.7+0.1	15.2-15.5	0,4 (0.9)			
275	5.4-5.6	1,1-1.7	0.4 (1.2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3 (1a) (2a)	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6 (4)	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9 (3)	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1240	15.2-17.8	-	-	-	ca.15	100	min.7,0	200	0,3-0,6
							275	5,4-5,6	530	2,9-3,1
ca.66	11.7	1240-1250							970	4,8-5,0
	4,0	1320-1350				280-380			1200	8.0
	1450	0 - 1,0								
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1200	0,7 bar 152.0-155,0 (149.0-158.0)	1240-1250*	LDA 350	0 bar 51.0-55.0 (48.0-53.0)	100	19,5-21.0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

11.82

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

C23

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PE6P..RS377 + RQV..PA 425 R	0,20		12,3-12,4
		0,70	12,7-12,8
		0	11,1-11,2
		0,16	11,5-11,7

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 11,8f
En 4. Edition

Testoil-ISO 4113

PE 6 P 110 A 720 RS 371 RQ 300/1100 PA 424 R
Komb.-Nr. 0 401 846 398

supersedes 10.82
company: Daimler Benz
engine: OM 355 A (207 kW) 280PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,7+0,1	15,7 - 15,9	0,4(0,8)			
300	6,1-6,3	1,4 - 2,0	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
650	19,2-20,8	650	20,0	10,7	1145-1160	300	6,2	100	min.8,2	1100	11,7-11,8
VH = max. 46°				4,0	1195-1225			300	6,1-6,3	650	11,7-11,9
				1350	0 - 1,0			410-450 = 2,0			

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/–1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/–1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA 1100	0,7 bar 157,0 - 159,0 (154,0 - 162,0)		LDA 1100	0 bar 142,0 - 144,0 (139,0 - 147,0)	100	140,0 - 160,0
					100-220 (80-240)	

Checking values in brackets

4.83

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing (XXXXXXX) pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure ≈ bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
371 + 424 R	0,70	0,39 0,35 0	11,7 - 11,8 11,5 - 11,6 11,2 - 11,3 11,0 - 11,1

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

D2

D2
En

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 14,6 1 1
2. Edition

En

PE8P120A320LS3807 RQV 300-1150PA526-2
1-8-7-2-6-3-5-4 ie 45° ± 0,5° (± 0,75°)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

superseded 10.82
company: Daimler-Benz
engine: OM 422 LA
276 kW (375PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	11,6+0,1	18,9-19,1	0,5(0,9)			
300	4,8-5,0	1,2- 2,0	0,8(1,2)			
1150	11,6+0,1	C,Sp. 1 u. 2	0,75			
600	11,6+0,1	C, Sp.4 u. 5	0,75			
500	10,1+0,1					

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca.10	100	min.6,0	250	1,0-1,2
							300	4,2-4,4	550	3,4-3,7
									850	4,9-5,3
ca.65	10,6	1190-1200				320-465			1150	7,6
	4,0	1230-1260								
	1350	0- 1,0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1190-1200*	LDA	0,7 bar	100	140,0-160,0	-	-
900	189,0-191,0		500	182,0-186,0				
	(186,0-194,0)			(179,0-189,0)				
LDA	0,7 bar		LDA	0 bar				
1150	185,0-189,0		500	139,0-141,0				
	(182,0-192,0)			(136,0-144,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.83

D3

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung
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D3

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE8P..LS3807 + .. PA526-2	0,44	0,70 0 0,34	11,1-11,3 11,6-11,7 10,1-10,2 10,5-10,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 14,6 1
2. Edition

En

PE 8 P 120 A 320 LS 3807 ROV 300-1150 PA 526

supersedes 5.81
company Daimler-Benz
engine: OM 422 LA
276 kW (375 PS)

1-8-7-2-6-3-5-4 je 45° ±0,5° (±0,75°)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15 mm (from BDC) Zyl. 8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	11,6+0,1	18,9-19,1	0,5(0,9)			
300	4,8-5,0	1,2-2,0	0,8(1,2)			
1150/600	11,6+0,1	C, Sp. 2 u.5	0,75(1,2)			
500	10,1+0,1	C, Sp. 5	0,75			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca.10	100	min.6,0	250	1,0-1,2
							300	4,2-4,4	550	3,4-3,7
ca.65	10,6	1190-1200							850	4,9-5,3
	4,0	1230-1260								
	1350	0 - 1,0				320-465 (3a)			1150	7,6

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 900	0,7 bar 189,0-191,0 (186,0-194,0)	1190-1200*	LDA 600	0,7 bar 182,0-186,0 (179,0-189,0)	100	140,0-160,0		
LDA 1150	0,7 bar 185,0-189,0 (182,0-192,0)		LDA 500	0 bar 139,0-141,0 (136,0-144,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.83

D5

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

D5

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

MB 14,6 1

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 8 P..LS 3807 + ROV.. PA 526	0,44	0,70 0 0,34	11,1-11,3 11,6-11,7 10,1-10,2 10,5-10,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

(1) PP 001/4 MAN 11,1 q 8
1. Edition
En

PES 6 P 120 A 720 LS 388 RQV 250-1100 PA 508

supersedes –
company: MAN
engine: D 2566 MKF
235 kW (320 PS)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) 7yl. 6 - RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,1+0,1	21,7-22,0	0,5(0,9)			
250	6,3-6,5	1,1-1,7	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca.15 (3a)	100	min.7,9	200	0,6-0,8
							250	6,3-6,5	500	4,3-4,5
ca.64	10,3	1140-1150					400-460	= 2,0	800	5,9-6,1
	4,0	1225-1255							1100	8,5
	1400	0 - 1,0								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	1,0 bar	1140-1150*	LDA	0,34 bar	100	205,0-225,0	1100	11,3+0,1
750	217,0-220,0		500	145,0-150,0			750	13,1+0,1
	(214,0-223,0)			(142,0-153,0)			900	12,6+0,1
LDA	1,0 bar		LDA	0 bar			1000	11,8+0,2
1100	180,0-185,0		500	101,0-104,0				
	(177,0-188,0)			(98,0-107,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

11.82

D7

BOSCH
Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung.

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 P..LS 388 + RQV.. PA 508	0,34	1,0 0 0,61	10,9-11,0 13,1-13,2 9,4-9,5 12,5-12,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP001/4MAN11,1 q 9
1. Edition
En

PES6P120A720LS388 RQV 250-1050 PA 508

supersedes

company MAN

engine: D2566 MK/319
235 kW (320 PS)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Zyl. 6 - RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,1+0,1	21,7-22,0	0,5(0,9)			
250	6,3-6,5	1,1-1,7	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca.11	100	min.7,1	200	
							250	6,3-6,5	480	
ca.63	10,3	1090-1100						385-445 = 2,0	770	
	4,0	1175-1205							1050	
	1300	0 - 1,0				③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
LDA 750	1,0 bar 217,0-220,0 (214,0-223,0)	1090-1100*	LDA 500	0,34 bar 145,0-150,0 (142,0-153,0)	100	205,0-225,0	1050	11,3+0,1
							750	13,1+0,1
							810	12,6+0,2
LDA 1050	1,0 bar 180,0-185,0 (177,0-188,0)		LDA 500	0 bar 101,0-104,0 (98,0-107,0)			950	11,6+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

11.82

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

D9

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PES6P..LS388 +RQV..PA508	0,34	1,0 0 0,61	10,9-11,0 13,1-13,2 9,4- 9,5 12,5-12,9

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

40

(1A) WPP 001/4 MB 11,4 q
1. Edition
En

PES 6 P 120 A 820 LS 3112 RSV 350-1100 PQ/500

supersedes –
company Daimler-Benz
engine OM407A
206 kW (280 PS)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 (3,95-4,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,5+0,1	17,5-17,7	0,5 (0,9)			
350	4,7-4,9	1,6-2,2	0,8 (1,2)			
600	11,8+0,1	C, Sp. 4 u. 5	0,75(1,2)			
500	10,5+0,1					

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 25	350	4,8	1100	11,5-11,6
	x = 3,25								750	11,7-11,9
							420-460	= 2,0	600	11,8-11,9
ca. 48 (2a)	10,5	1135-1145								
	4,0	1215-1245								
	1300	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 175,0-177,0 (172,0-180,0)	1135-1145*	LDA 600	0,7 bar 177,0-183,0 (174,0-186,0)	100	150,0-170,0	-	-
			LDA 500	0 bar 143,0-145,0 (140,0-148,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

1.83

BOSCH Geschäftsbereich KH, Kundendienst Kfz-Ausrüstung

D11

D11

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

MB 11,4 q

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PES6P..LS3112 + RSV..PO/500	0,70		11,8 - 11,9
		0,40	10,7 - 10,9
		0,50	11,6 - 11,7
		0	10,5 - 10,6

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MWM 1,5 c
5. Edition

En

PES 2 A 75/80 D..RS1235, 1252, 1298
3 ..RS1236, 1239, 1299
4 ..RS1237,1246, 1276, 1301
6 ..RS1238, 1302

EP/RSV 300-1000 A7B505DR supersedes company 5.79 MWM
EP/RSV 325-1500 A2B505DR engine D 208 - / D 308 - / D 225 - / D 325 - / D 226 - / D 327 - 2..6

**
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,2-2,3 (2,15-2,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery "C" and "D" cm³/100 strokes 3 — 7,5Ø	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery "C" and "D" cm³/100 strokes 3 — 8 Ø	Spring pre-tensioning (torque-control valve) mm 6
1000	12	6,2-6,6	0,4	9	4,1-4,5	
	9	3,2-3,7		6	1,2-2,0	
200	9	2,1-2,8		9	2,7-3,7	

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

300-1000

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6*	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.68	1000 1050 1100	16,0 8,5 2,4	without auxiliary spring	ca.28	300 100 300 450	5,5 19-21 5,7-6,3 0 - 1	-	-
ca.67 (2a)	1030 1070 1120	8,0-9,0 2,0-4,0 0,3-1,0	with auxiliary spring					

* The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop, Test oil temp 40 °C (104 °F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limiter, Note changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery / Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
page 3 - 33!								

** As from FD 823 the idle auxiliary-spring has been changed from 1 424 641 000 to ... 001. New values enclosed.

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.83

BOSCH Geschäftsbereich KH Kundendienst Kfz Ausrüstung
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Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

The numbers denote the sequence of the tests

B. Governor Settings

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.58	1500 1580 1630	16,0 9,0 4,2	without auxiliary spring			ca.16	325	7,0	-	-
							325 445-	7,4-7,6 505=2,0		
ca.56 (5)	1530 1580 1720	8,0-9,0 3,0-4,0 0,3-1,0	with auxiliary n spring							

(1A)

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational speed limitation	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp 40°C (104 F)		Note changed to)						Control rod travel
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
page	3 - 33!							

Checking values in brackets

*1 mm less control rod travel than col 2

The rating plate described on MWM 1.5 a has recently been modified to enable more precise adjustment on governors with torque control. The modification was carried out in columns n = engine speed and Q = (full-load quantity). Testing was extended to two speeds and two quantities.

Deviating from the instructions WPP 001/4, 1. Supplement "Adjustment of the governor and the pump", the following points now apply:

(2) Adjustment as per rating plate n = 1 (1st speed) and Q = (1st quantity; or according to columns 1 and 2.

(3) Adjustment is carried out until the control-rod travel changes, as read under (2), or (with the new rating plate) until the 2nd quantity is reached at the second speed; or as per columns 4 and 5.

(6) Is to be adjusted as per rating plate n = (1st speed + 20 min^{-1}); or as per column 3.

In the case of repairs to Fendt tractors on which the new rating plate hat not yet been attached (2nd speed and 2nd quantity), the full-load data applies, listed as per engine types; in accordance with the above instructions.

With new replacement pumps delivered from the Stuttgart warehouse, the spring retainer is not fitted! Order from MWM Co using the old rating plate.

Full-load data for Fendt tractors - Engine D 208/308

Only valid for engines with pumps PES 3 A 75 C 320/3 RS 1236 and 39
PES 4 A 75 C 320/3 RS 1237

En

C. Settings for Fuel injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

Fendt tractors - Output at speed - Engine and teactor type

32 PS / 2100 min^{-1} - D 208 - 3 - Farmer 2 D -

1050	36,0 - 37,0	1070	700	39,0 - 41,0

32 PS / 1050 min^{-1} - D 308 - 3 - 231 GT -

975	36,0 - 37,0	990	700	39,0 - 41,0

38 PS / 2600 min^{-1} - D 208 - 3 - Farmer 2 -

1300	35,0 - 36,0	1320	700	36,0 - 38,0

55 PS / 2400 min^{-1} - D 208 - 4 - Farmer 4 S -

1200	41,0 - 42,0	1220	700	42,0 - 44,0

General fitting - Output at speed

D 208 - 2

F 31 PS / 3000 min^{-1}

1500	41,5 - 43,5	1520

B 30 PS / 3000 min^{-1}

1500	39,5 - 41,5	1520

A 28 PS / 3000 min^{-1}

1500	41,5 - 43,5	1520

F 30 PS / 2800 min^{-1}

1400	41,5 - 43,5	1420

B 29 PS / 2800 min^{-1}

1400	40,0 - 42,0	1420

A 27 PS / 2800 min^{-1}

1400	41,5 - 43,5	1420

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 29 PS / 2600 min^{-1}								
1300	43,0 - 45,0	1320						
B 28 PS / 2600 min^{-1}								
1300	41,0 - 43,0	1320						
A 26 PS / 2600 min^{-1}								
1300	42,5 - 44,5	1320						
F 28 PS / 2500 min^{-1}								
1250	42,5 - 44,5	1270						
B 27 PS / 2500 min^{-1}								
1250	40,5 - 42,5	1270						
A 25 PS / 2500 min^{-1}								
1250	41,5 - 43,5	1270						
F 27 PS / 2400 min^{-1}								
1200	42,0 - 44,0	1220						
B 26 PS / 2400 min^{-1}								
1200	40,0 - 42,0	1220						
A 24 PS / 2400 min^{-1}								
1200	41,0 - 43,0	1220						
F 26 PS / 2300 min^{-1}								
1150	41,5 - 43,5	1170						
B 25 PS / 2300 min^{-1}								
1150	39,5 - 41,5	1170						
A 23 PS / 2300 min^{-1}								
1150	40,5 - 42,5	1170						

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 25 PS / 2200 min^{-1}								
1100	41,0 - 43,0	1120						
B 24 PS / 2200 min^{-1}								
1100	39,0 - 41,0	1120						
A 22 PS / 2200 min^{-1}								
1100	40,0 - 42,0	1120						
F 24 PS / 2100 min^{-1}								
1050	40,5 - 42,5	1060						
B 23 PS / 2100 min^{-1}								
1050	38,0 - 40,0	1060						
A 21 PS / 2100 min^{-1}								
1050	39,0 - 41,0	1060						
F 23 PS / 2000 min^{-1}								
1000	39,0 - 41,0	1010						
B 22 PS / 2000 min^{-1}								
1000	37,0 - 39,0	1010						
A 20 PS / 2000 min^{-1}								
1000	38,0 - 40,0	1010						
B 20 PS / 1800 min^{-1}								
900	36,0 - 38,0	910						
A 18 PS / 1800 min^{-1}								
900	36,5 - 38,5	910						
B 16 PS / 1500 min^{-1}								
750	34,0 - 36,0	760						

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
A 15 PS / 1500 min^{-1}								
750	36,0 - 38,0	760						

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 46,5 PS / 3000 min^{-1}								
1500	42,0 - 44,0	1520						
B 45 PS / 3000 min^{-1}								
1500	39,0 - 41,0	1520						
A 42 PS / 3000 min^{-1}								
1500	40,5 - 42,5	1520						
F 45 PS / 2800 min^{-1}								
1400	42,0 - 44,0	1420						
B 43,5 PS / 2800 min^{-1}								
1400	39,0 - 41,0	1420						
A 40,5 PS / 2800 min^{-1}								
1400	40,0 - 42,0	1420						
F 43,5 PS / 2600 min^{-1}								
1300	41,5 - 43,5	1320						
B 42 PS / 2600 min^{-1}								
1300	39,5 - 41,5	1320						
A 39 PS / 2600 min^{-1}								
1300	40,0 - 42,0	1320						
F 42 PS / 2500 min^{-1}								
1250	40,5 - 42,5	1270						
B 40,5 PS / 2500 min^{-1}								
1250	38,5 - 40,5	1270						
A 37,5 PS / 2500 min^{-1}								
1250	39,5 - 41,5	1270						

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

F 40,5 PS / 2400 min^{-1}

1200 40,5 - 42,5 1220

B 39 PS / 2400 min^{-1}

1200 38,5 - 40,5 1220

A 36 PS / 2400 min^{-1}

1200 39,5 - 41,5 1220

F 39 PS / 2300 min^{-1}

1150 39,5 - 41,5 1170

B 37,5 PS / 2300 min^{-1}

1150 38,0 - 40,0 1170

A 34,5 PS / 2300 min^{-1}

1150 38,0 - 40,0 1170

F 37,5 PS / 2200 min^{-1}

1100 38,5 - 40,5 1120

B 36 PS / 2200 min^{-1}

1100 36,5 - 38,5 1120

A 33 PS / 2200 min^{-1}

1100 38,0 - 40,0 1120

F 36 PS / 2100 min^{-1}

1050 38,0 - 40,0 1060

B 34,5 PS / 2100 min^{-1}

1050 36,0 - 38,0 1060

A 31,5 PS / 2100 min^{-1}

1050 36,0 - 38,0 1060

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 34,5 PS / 2000 min^{-1}								
1000	37,0 - 39,0	1010						
B 33 PS / 2000 min^{-1}								
1000	35,5 - 37,5	1010						
A 30 PS / 2000 min^{-1}								
1000	37,0 - 39,0	1010						
B 30 PS / 1800 min^{-1}								
900	34,0 - 36,0	910						
A 27 PS / 1800 min^{-1}								
900	35,0 - 37,0	910						
B 24 PS / 1500 min^{-1}								
750	33,0 - 35,0	760						
A 22,5 PS / 1500 min^{-1}								
750	36,0 - 38,0	760						

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 62 PS / 3000 min^{-1}								
1500	40,5 - 42,5	1520						
B 60 PS / 3000 min^{-1}								
1500	39,0 - 41,0	1520						
A 56 PS / 3000 min^{-1}								
1500	40,0 - 42,0	1520						
F 60 PS / 2800 min^{-1}								
1400	40,0 - 42,0	1420						
B 58 PS / 2800 min^{-1}								
1400	35,5 - 37,5	1420						
A 54 PS / 2800 min^{-1}								
1400	40,0 - 42,0	1420						
F 58 PS / 2600 min^{-1}								
1300	40,0 - 42,0	1320						
B 56 PS / 2600 min^{-1}								
1300	38,0 - 40,0	1320						
A 52 PS / 2600 min^{-1}								
1300	39,0 - 41,0	1320						
F 56 PS / 2500 min^{-1}								
1250	39,0 - 41,0	1270						
B 54 PS / 2500 min^{-1}								
1250	37,5 - 39,5	1270						
A 50 PS / 2500 min^{-1}								
1250	39,0 - 41,0	1270						

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

F 54 PS / 2400 min^{-1}

1200 39,0 - 41,0 1220

B 52 PS / 2400 min^{-1}

1200 37,5 - 39,5 1220

A 48 PS / 2400 min^{-1}

1200 38,0 - 40,0 1220

F 52 PS / 2300 min^{-1}

1150 38,0 - 40,0 1170

B 50 PS / 2300 min^{-1}

1150 36,5 - 38,5 1170

A 46 PS / 2300 min^{-1}

1150 37,5 - 39,5 1170

F 50 PS / 2200 min^{-1}

1100 39,0 - 41,0 1120

B 48 PS / 2200 min^{-1}

1100 37,0 - 39,0 1120

A 44 PS / 2200 min^{-1}

1100 38,0 - 40,0 1120

F 48 PS / 2100 min^{-1}

1050 37,5 - 39,5 1060

B 46 PS / 2100 min^{-1}

1050 35,5 - 37,5 1060

A 42 PS / 2100 min^{-1}

1050 36,0 - 38,0 1060

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	-
F 46 PS / 2000 min^{-1}								
1000	38,0 - 40,0	1010						
B 44 PS / 2000 min^{-1}								
1000	35,5 - 37,5	1010						
A 40 PS / 2000 min^{-1}								
1000	36,0 - 38,0	1010						
B 40 PS / 1800 min^{-1}								
900	34,5 - 36,5	910						
A 36 PS / 1800 min^{-1}								
900	34,0 - 36,0	910						
B 32 PS / 1500 min^{-1}								
750	30,5 - 32,5	760						
A 30 PS / 1500 min^{-1}								
750	33,0 - 35,0	760						

(1)

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 93 PS / 3000 min^{-1}								
1500	39,5 - 41,5	1520						
B 90 PS / 3000 min^{-1}								
1500	38,0 - 40,0	1520						
A 84 PS / 3000 min^{-1}								
1500	39,0 - 41,0	1520						
F 90 PS / 2800 min^{-1}								
1400	39,5 - 41,5	1420						
B 87 PS / 2800 min^{-1}								
1400	38,0 - 40,0	1420						
A 81 PS / 2800 min^{-1}								
1400	39,0 - 41,0	1420						
F 87 PS / 2600 min^{-1}								
1300	39,5 - 41,5	1320						
B 84 PS / 2600 min^{-1}								
1300	38,0 - 40,0	1320						
A 78 PS / 2600 min^{-1}								
1300	38,5 - 40,5	1320						
F 84 PS / 2500 min^{-1}								
1250	39,0 - 41,0	1270						
B 81 PS / 2500 min^{-1}								
1250	37,0 - 39,0	1270						
A 75 PS / 2500 min^{-1}								
1250	38,0 - 40,0	1270						

Checking values in brackets

* 1 mm less control rod travel than col. 2

E1

En E4

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

F 81 PS / 2400 min^{-1}

1200 38,0 - 40,0 1220

B 78 PS / 2400 min^{-1}

1200 36,5 - 38,5 1220

A 72 PS / 2400 min^{-1}

1200 38,0 - 40,0 1220

F 78 PS / 2300 min^{-1}

1150 38,0 - 40,0 1170

B 75 PS / 2300 min^{-1}

1150 36,5 - 38,5 1170

A 69 PS / 2300 min^{-1}

1150 37,0 - 39,0 1170

F 75 PS / 2200 min^{-1}

1100 38,0 - 40,0 1120

B 72 PS / 2200 min^{-1}

1100 36,0 - 38,0 1120

A 66 PS / 2200 min^{-1}

1100 37,0 - 39,0 1120

F 72 PS / 2100 min^{-1}

1050 37,0 - 39,0 1060

B 69 PS / 2100 min^{-1}

1050 35,5 - 37,5 1060

A 63 PS / 2100 min^{-1}

1050 36,0 - 38,0 1060

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 69 PS / 2000 min^{-1}								
1000	36,5 - 38,5	1010						
B 66 PS / 2000 min^{-1}								
1000	34,5 - 36,5	1010						
A 60 PS / 2000 min^{-1}								
1000	35,0 - 37,0	1010						
B 60 PS / 1800 min^{-1}								
900	33,5 - 35,5	910						
A 54 PS / 1800 min^{-1}								
900	34,0 - 36,0	910						
B 48 PS / 1500 min^{-1}								
750	31,0 - 33,0	760						
A 45 PS / 1500 min^{-1}								
750	33,0 - 35,0	760						

Checking values in brackets

* 1 mm less control rod travel than col. 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 35,5 PS / 3000 min^{-1}								
1500	55,0 - 57,0	1520	800	52,5 - 55,5				
A 32 PS / 3000 min^{-1}								
1500	51,0 - 53,0	1520						
F 41 PS / 2800 min^{-1}								
1400	66,5 - 68,5	1420	800	55,5 - 58,5				
F 38,5 PS / 2500 min^{-1}								
1250	62,5 - 64,5	1270	800	55,5 - 58,5				
B 37 PS / 2500 min^{-1}								
1250	59,5 - 61,5	1270	800	52,5 - 55,5				
A 34 PS / 2500 min^{-1}								
1250	55,5 - 57,5	1270						
F 36,5 PS / 2300 min^{-1}								
1150	60,5 - 62,5	1170	800	55,5 - 58,5				
B 35 PS / 2300 min^{-1}								
1150	58,5 - 60,5	1170	800	52,5 - 55,5				
A 32 PS / 2300 min^{-1}								
1150	53,0 - 55,0	1170						
F 33 PS / 2000 min^{-1}								
1000	58,5 - 60,5	1010	750	55,0 - 58,0				
B 31 PS / 2000 min^{-1}								
1000	55,0 - 57,0	1010	750	52,5 - 55,5				
A 28,5 PS / 2000 min^{-1}								
1000	50,0 - 52,0	1010						

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 28,5 PS / 1800 min^{-1}								
900	52,5 - 54,5	910	750	52,0 - 55,0				
A 26 PS / 1800 min^{-1}								
900	48,0 - 50,0	910						
B 24 PS / 1500 min^{-1}								
750	46,5 - 48,5	760	750	50,5 - 53,5				
A 22 PS / 1500 min^{-1}								
750	51,0 - 53,0	760						

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 53 PS / 3000 min^{-1}								
1500	54,5 - 56,5	1520	800	51,0 - 54,0				
A 48 PS / 3000 min^{-1}								
1500	50,5 - 52,5	1520						
F 62 PS / 2800 min^{-1}								
1400	66,5 - 68,5	1420	800	54,0 - 57,0				
F 58 PS / 2500 min^{-1}								
1250	62,5 - 64,5	1270	800	54,0 - 57,0				
B 56 PS / 2500 min^{-1}								
1250	59,5 - 61,5	1270	800	51,0 - 54,0				
A 51 PS / 2500 min^{-1}								
1250	54,5 - 56,5	1270						
F 55 PS / 2300 min^{-1}								
1150	58,5 - 60,5	1170	800	54,0 - 57,0				
B 53 PS / 2300 min^{-1}								
1150	57,5 - 59,5	1170	800	51,0 - 54,0				
A 48 PS / 2300 min^{-1}								
1150	51,5 - 53,5	1170						
F 49,5 PS / 2000 min^{-1}								
1000	57,5 - 59,5	1010	750	54,0 - 57,0				
B 46,5 PS / 2000 min^{-1}								
1000	53,5 - 55,5	1010	750	51,0 - 54,0				
A 43 PS / 2000 min^{-1}								
1000	48,5 - 50,5	1010						

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 43 PS / 1800 min^{-1}								
900	52,5 - 54,5	910	750	52,0 - 55,0				
A 39 PS / 1800 min^{-1}								
900	47,5 - 49,5	910						
B 36 PS / 1500 min^{-1}								
750	49,5 - 51,5	760	650	49,0 - 52,0				
A 33 PS / 1500 min^{-1}								
750	45,5 - 47,5	760						

(1)

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 71 PS / 3000 min^{-1}								
1500	54,5 - 56,5	1520	800	62,0 - 65,0				
A 64 PS / 3000 min^{-1}								
1500	49,5 - 51,5	1520						
F 83 PS / 2800 min^{-1}								
1400	65,5 - 67,5	1420	800	63,0 - 66,0				
F 78 PS / 2500 min^{-1}								
1250	61,5 - 63,5	1270	800	50,0 - 53,0				
B 74,5 PS / 2500 min^{-1}								
1250	58,5 - 60,5	1270	800	50,0 - 53,0				
A 68 PS / 2500 min^{-1}								
1250	53,5 - 55,5	1270						
F 73 PS / 2300 min^{-1}								
1150	60,5 - 62,5	1170	800	52,0 - 55,0				
B 71 PS / 2300 min^{-1}								
1150	58,5 - 60,5	1170	800	50,0 - 53,0				
A 64 PS / 2300 min^{-1}								
1150	51,5 - 53,5	1170						
F 66 PS / 2000 min^{-1}								
1000	57,5 - 59,5	1010	750	52,0 - 55,0				
B 62,5 PS / 2000 min^{-1}								
1000	53,5 - 55,5	1010	750	50,0 - 53,0				
A 57 PS / 2000 min^{-1}								
1000	48,5 - 50,5	1010						

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 57 PS / 1800 min^{-1}								
900	51,5 - 53,5	910	750	49,0 - 52,0				
A 52 PS / 1800 min^{-1}								
900	45,5 - 47,5	910						
B 48 PS / 1500 min^{-1}								
750	48,5 - 50,5	760	650	47,0 - 50,0				
A 44 PS / 1500 min^{-1}								
750	45,5 - 47,5	760						

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 106 PS / 3000 min^{-1}								
1500	55,5 - 57,5	1520	800	50,0 - 53,0				
A 96 PS / 3000 min^{-1}								
1500	49,5 - 51,5	1520						
F 125 PS / 2800 min^{-1}								
1400	66,5 - 68,5	1420	800	54,0 - 57,0				
F 117 PS / 2500 min^{-1}								
1250	61,5 - 63,5	1270	800	54,0 - 57,0				
B 112 PS / 2500 min^{-1}								
1250	58,5 - 60,5	1270	800	50,0 - 53,0				
A 102 PS / 2500 min^{-1}								
1250	53,5 - 55,5	1270						
F 110 PS / 2300 min^{-1}								
1150	59,5 - 61,5	1170	800	54,0 - 57,0				
B 106 PS / 2300 min^{-1}								
1150	56,5 - 58,5	1170	800	50,0 - 53,0				
A 96 PS / 2300 min^{-1}								
1150	51,5 - 53,5	1170						
F 99 PS / 2000 min^{-1}								
1000	56,5 - 58,5	1010	750	54,0 - 57,0				
B 94 PS / 2000 min^{-1}								
1000	53,5 - 55,5	1010	750	50,0 - 53,0				
A 86 PS / 2000 min^{-1}								
1000	47,5 - 49,5	1010						

Checking values in brackets

* 1 mm less control rod travel than col. 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 86 PS / 1800 min^{-1}								
900	49,5 - 51,5	910	750	53,0 - 56,0				
A 78 PS / 1800 min^{-1}								
900	46,5 - 48,5	910						
B 72 PS / 1500 min^{-1}								
750	49,5 - 51,5	760	650	47,0 - 50,0				
A 66 PS / 1500 min^{-1}								
750	45,5 - 47,5	760						

Checking values in brackets

* 1 mm less control rod travel than col. 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 33 PS / 2800 min^{-1}								
1400	51,5 - 53,5	1420	800	46,0 - 49,0				
F 32 PS / 2500 min^{-1}								
1250	52,5 - 54,5	1270	800	46,0 - 49,0				
B 31 PS / 2500 min^{-1}								
1250	49,5 - 51,5	1270	800	44,0 - 47,0				
A 28 PS / 2500 min^{-1}								
1250	49,5 - 51,5	1270						
F 30 PS / 2300 min^{-1}								
1150	48,5 - 50,5	1170	800	46,0 - 49,0				
B 28,5 PS / 2300 min^{-1}								
1150	45,5 - 47,5	1170	800	44,0 - 47,0				
A 26 PS / 2300 min^{-1}								
1150	45,5 - 47,5	1170						
F 26 PS / 2000 min^{-1}								
1000	43,5 - 45,5	1010	800	46,0 - 49,0				
B 25 PS / 2000 min^{-1}								
1000	41,5 - 43,5	1010	800	44,0 - 47,0				
A 23 PS / 2000 min^{-1}								
1000	41,5 - 43,5	1010						
A 21 PS / 1800 min^{-1}								
900	41,5 - 43,5	910						
A 17 PS / 1500 min^{-1}								
750	39,5 - 41,5	760						

Checking values in brackets

* 1 mm less control rod travel than col. 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 50 PS / 2800 min^{-1}								
1400	48,5 - 50,5	1420	800	46,0 - 49,0				
F 48,5 PS / 2500 min^{-1}								
1250	50,5 - 52,5	1270	800	46,0 - 49,0				
B 46,5 PS / 2500 min^{-1}								
1250	47,5 - 49,5	1270	800	43,0 - 46,0				
A 42 PS / 2500 min^{-1}								
1250	47,5 - 49,5	1270						
F 46 PS / 2300 min^{-1}								
1150	47,5 - 49,5	1170	800	46,0 - 49,0				
B 44 PS / 2300 min^{-1}								
1150	45,5 - 47,5	1170	800	43,0 - 46,0				
A 40 PS / 2300 min^{-1}								
1150	45,5 - 47,5	1170						
F 40 PS / 2000 min^{-1}								
1000	44,5 - 46,5	1010	800	46,0 - 49,0				
B 38,5 PS / 2000 min^{-1}								
1000	42,5 - 44,5	1010	800	43,0 - 46,0				
A 35 PS / 2000 min^{-1}								
1000	42,5 - 44,5	1010						
A 31,5 PS / 1800 min^{-1}								
900	40,5 - 42,5	910						
A 26 PS / 1500 min^{-1}								
750	39,5 - 41,5	760						

Checking values in brackets

* 1 mm less control rod travel than col. 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 68 PS / 2800 min^{-1}								
1400	49,5 - 51,5	1420	800	46,0 - 49,0				
F 66 PS / 2500 min^{-1}								
1250	50,5 - 52,5	1270	800	46,0 - 49,0				
B 63 PS / 2500 min^{-1}								
1250	47,5 - 49,5	1270	800	44,0 - 47,0				
A 57,5 PS / 2500 min^{-1}								
1250	47,5 - 49,5	1270						
F 61 PS / 2300 min^{-1}								
1150	47,5 - 49,5	1170	800	46,0 - 49,0				
B 58,5 PS / 2300 min^{-1}								
1150	45,5 - 47,5	1170	800	44,0 - 47,0				
A 53,5 PS / 2300 min^{-1}								
1150	45,5 - 47,5	1170						
F 53 PS / 2000 min^{-1}								
1000	43,5 - 45,5	1010	800	46,0 - 49,0				
B 51 PS / 2000 min^{-1}								
1000	41,5 - 43,5	1010	800	44,0 - 47,0				
A 46,5 PS / 2000 min^{-1}								
1000	41,5 - 43,5	1010						
A 42 PS / 1800 min^{-1}								
900	40,5 - 42,5	910						
A 35 PS / 1500 min^{-1}								
750	39,5 - 41,5	760						

Checking values in brackets

* 1 mm less control rod travel than col. 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 102 PS / 2800 min^{-1}								
1400	49,5 - 51,5	1420	800	46,0 - 49,0				
F 99 PS / 2500 min^{-1}								
1250	50,5 - 52,5	1270	800	46,0 - 49,0				
B 95 PS / 2500 min^{-1}								
1250	47,5 - 49,5	1270	800	44,0 - 47,0				
A 86 PS / 2500 min^{-1}								
1250	47,5 - 49,5	1270						
F 92 PS / 2300 min^{-1}								
1150	47,5 - 49,5	1170	800	46,0 - 49,0				
B 88 PS / 2300 min^{-1}								
1150	45,5 - 47,5	1170	800	44,0 - 47,0				
A 80 PS / 2300 min^{-1}								
1150	45,5 - 47,5	1170						
F 80 PS / 2000 min^{-1}								
1000	43,5 - 45,5	1010	800	46,0 - 49,0				
B 77 PS / 2000 min^{-1}								
1000	41,5 - 43,5	1010	800	44,0 - 47,0				
A 70 PS / 2000 min^{-1}								
1000	41,5 - 43,5	1010						
A 63 PS / 1800 min^{-1}								
900	40,5 - 42,5	910						
A 52,5 PS / 1500 min^{-1}								
750	39,5 - 41,5	760						

Checking values in brackets

* 1 mm less control rod travel than col. 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 48 PS / 3000 min^{-1}								
1500	47,0 - 49,0	1520	800	49,5 - 52,5				
A 43,5 PS / 3000 min^{-1}								
1500	44,0 - 46,0	1520						
F 55 PS / 2800 min^{-1}								
1400	53,5 - 55,5	1420	800	52,5 - 55,5				
F 53 PS / 2500 min^{-1}								
1250	55,5 - 57,5	1270	800	52,5 - 55,5				
B 50 PS / 2500 min^{-1}								
1250	52,5 - 54,5	1270	800	49,5 - 52,5				
A 46,5 PS / 2500 min^{-1}								
1250	48,0 - 50,0	1270						
F 50 PS / 2300 min^{-1}								
1150	56,0 - 58,0	1170	800	51,0 - 54,0				
B 48,5 PS / 2300 min^{-1}								
1150	51,5 - 53,5	1170	800	49,5 - 52,5				
A 44 PS / 2300 min^{-1}								
1150	47,0 - 49,0	1170						
F 46 PS / 2000 min^{-1}								
1000	54,0 - 56,0	1010	750	52,5 - 55,5				
B 44 PS / 2000 min^{-1}								
1000	50,5 - 52,5	1010	750	50,0 - 53,0				
A 40 PS / 2000 min^{-1}								
1000	46,0 - 48,0	1010						

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 40 PS / 1800 min^{-1}								
900	49,5 - 51,5	910	750	50,0 - 53,0				
A 36,5 PS / 1800 min^{-1}								
900	45,0 - 47,0	910						
B 33,5 PS / 1500 min^{-1}								
750	47,5 - 49,5	760						
A 30,5 PS / 1500 min^{-1}								
750	43,5 - 45,5	760						

Checking values in brackets

* 1 mm less control rod travel than col. 2

C. Settings for Fuel injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 64 PS / 3000 min^{-1}								
1500	47,5 - 49,5	1520	800	49,0 - 52,0				
A 58 PS / 3000 min^{-1}								
1500	44,0 - 46,0	1520						
F 74 PS / 2800 min^{-1}								
1400	53,5 - 55,5	1420	800	52,0 - 55,0				
F 70,5 PS / 2500 min^{-1}								
1250	52,5 - 54,5	1270	800	52,0 - 55,0				
B 67 PS / 2500 min^{-1}								
1250	49,0 - 51,0	1270	800	49,0 - 52,0				
A 61 PS / 2500 min^{-1}								
1250	44,5 - 46,5	1270						
F 67 PS / 2300 min^{-1}								
1150	51,5 - 53,5	1170	800	52,0 - 55,0				
B 64,5 PS / 2300 min^{-1}								
1150	49,0 - 51,0	1170	800	49,0 - 52,0				
A 58,5 PS / 2300 min^{-1}								
1150	44,5 - 46,5	1170						
F 61 PS / 2000 min^{-1}								
1000	50,0 - 52,0	1010	750	49,5 - 52,5				
B 58,5 PS / 2000 min^{-1}								
1000	48,0 - 50,0	1010	750	49,5 - 52,5				
A 53 PS / 2000 min^{-1}								
1000	44,0 - 46,0	1010						

Checking values in brackets

* 1 mm less control rod travel than col. 2

E18

En E48

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 53 PS / 1800 min^{-1}								
900	47,0 - 49,0	910	750	49,5 - 52,5				
A 49 PS / 1800 min^{-1}								
900	43,0 - 45,0	910						
B 44,5 PS / 1500 min^{-1}								
750	47,0 - 49,0	760						
A 41 PS / 1500 min^{-1}								
750	43,0 - 45,0	760						

Checking values in brackets

• 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 96 PS / 3000 min^{-1}								
1500	51,5 - 53,5	1520	800	50,0 - 53,0				
A 87 PS / 3000 min^{-1}								
1500	47,5 - 49,5	1520						
F 112 PS / 2800 min^{-1}								
1400	58,0 - 60,0	1420	800	53,0 - 56,0				
F 106 PS / 2500 min^{-1}								
1250	57,5 - 59,5	1270	800	53,0 - 56,0				
B 101 PS / 2500 min^{-1}								
1250	54,0 - 56,0	1270	800	50,0 - 53,0				
A 92 PS / 2500 min^{-1}								
1250	49,0 - 51,0	1270						
F 101 PS / 2300 min^{-1}								
1150	57,5 - 59,5	1170	800	53,0 - 56,0				
B 97 PS / 2300 min^{-1}								
1150	55,0 - 57,0	1170	800	50,0 - 53,0				
A 88 PS / 2300 min^{-1}								
1150	50,0 - 52,0	1170						
F 92 PS / 2000 min^{-1}								
1000	52,5 - 54,5	1010	750	50,0 - 53,0				
B 88 PS / 2000 min^{-1}								
1000	50,0 - 52,0	1010	750	50,0 - 53,0				
A 80 PS / 2000 min^{-1}								
1000	45,5 - 47,5	1010						

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 80 PS / 1800 min^{-1}								
900	50,0 - 52,0	910	750	50,0 - 53,0				
A 73 PS / 1800 min^{-1}								
900	45,5 - 47,5	910						
B 67 PS / 1500 min^{-1}								
750	50,0 - 52,0	760	650	52,0 - 55,0				
A 61 PS / 1500 min^{-1}								
750	45,5 - 47,5	760						

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 7,0 a
4. Edition

En

PE 6 P 100/320 RS 100 (A) RQV 200-1200 PA 122/2 R

superseded 8.74
company Volvo
engine: TD 70

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,6-2,7 (2,55-2,75) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	12,7-13,4	0,5			2,5 ± 0,1 (max. 2,2-2,9)
600	9,0	6,1-7,3				
600	12,0	11,3-12,7				
600	15,0	16,5-18,2				
200	9,0	4,2-5,2				

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
ca. 68	1290	15,0-18,0	-	-	-	ca. 23	200	8,6-10,0	1290	8,3
	1550	0					300	6,4-8,8		
ca. 66	1200	15,0-17,8					400	2,9-5,4		
	1300	7,7-12,6					500	0,7-2,7		
	1400	0 - 7,6					590	0		
	1500	0				③a				

Torque control travel a = - mm

abnorm. sldg-sleeve pos'n = 36,0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ Idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1230-1240 *	LDA	0 bar	100	150,0-180,0	-	-
700	70,0-72,0 (69,0-73,0)		700	59,5-6,25 (58,5-63,5)	200	11,0-15,0		
					Dispersion max. 2,5			

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.83

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
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Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

E22

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PE 6 P .. RS 100 + RQV..PA 122/2R	0,11-0,14	0,05-0,11	

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 13,8 a 8
1. Edition
En

PE 6 P 120 A 720 RS 167 RQV 225-1100 PA 478 R

supersedes-
company: Fiat
engine 8210-02.422
Komb.-Nr. 0 401 846 428

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 - 2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,4+0,1	17,6-17,9	0,5 (0,8)			
225	7,5-7,7	1,7-2,3	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ①: rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 11	100	min.9,1	200	0,7-0,8
							225	7,5-7,7	500	2,8-3,0
ca. 61	10,4	1140-1150							800	4,7-4,9
	4,0	1205-1235				295-405			1100	8,0
	1350	0-1,0				③a				

Torque control travel s = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed ②b limitation intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
1100	176,0-179,0 (173,0-182,0)	1140-1150*	-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

E24

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/ 4 IHC 7,6 C
2. Edition
En

PES 6 MW 100/320 RS 1103
RQV 350-1300 MW 43-1
0 403 446 132

DHK 1 688 901 016
207 + 3 bar

supersedes 12.82
company: IHC-USA
engine: DT 466 B
143,4 kW (195 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,00-4,10 (3,95-4,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	10,9+0,1	9,55-9,75	0,35(0,6)			
350	5,7-5,8	1,6 - 2,0	0,35(0,55)			
1300	10,9+0,1					
500	9,4-9,5		0,65(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	8,0 0-1	1440-1505 1550	-	-	-	ca.13	100 350	min.9,0 5,8-6,0		
ca.61,5	4,0	1470-1480				360-700 ③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed ②b limitation intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
LDA 900	0,9 bar 95,5-97,5 (93,5-99,5)		LDA 1300	0,9 bar 96,5-100,5 (94,5-102,5)	100	19-21 mm RW 140-180		
			LDA 500	0 bar 63,5-65,5 (61,5-67,5)*		220-280 (210-290)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

F1

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
RS 1103 mit RQV..MW 43-1	0,4		10,5 - 10,6
		0,9	10,9 - 11,0
		0	9,4 - 9,5
		0,2	9,8 - 9,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Please note:

- Carry out pump adjustment only with overflow valve 1 417 413 040 and IH hose with throttle 1.57 mm diameter.
- Set locking device before testing position of sliding device.
- In unlocked condition do not operate at a speed higher than n = 500 min^{-1}.
- Set lower idle speed at stop screw.
- Set shutoff stop 1.5 - 2.0 mm in front of the stop.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 18,3 d 1
1. Edition
En

PE 10 P 110 A 320 LS 3818-1 RQV 350-1150 PA 678
1 - 8 - 7 - 6 - 3 - 5 - 2 - 10- 9 - 4
0 -27 -72 -99 -144-171-216-243-288-315° ± 0,5° (± 0,75°)

supersedes -
company: Daimler-Benz
engine: OM 423
261 kW (355 PS)
Komb.-Nr. 0 401 849 709

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 (3,95-4,15) mm (from BDC) RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,4+0,1	12,2-12,4	0,4(0,8)			
350	8,5-8,7	1,4-2,2	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca.18	100	min.10,0	300	1,2-1,4
ca. 62	11,4	1190-1200					350	8,5-8,7	580	3,6-3,9
	4,0	1250-1280							870	5,2-5,6
	1400	0-1,0				330-500 (3a)			1150	7,8

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery, Control-rod stop, Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1150	122,0-124,0 (119,0-127,0)	1190-1200*	600	112,0-116,0 (109,0-119,0)	100	130,0-150,0	1150	12,4+0,1
							600	12,9+0,1
1150	92,0-94,0 (89,0-97,0) **		900	113,0-118,0 (110,0-121,0)			900	12,6+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

** Reduced-delivery stop

3.83

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F3

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 RVI 8,8 b 1
5. Edition

En

PES 6 P 120 A 320 RS 417 ROV 300-1150 PA 527 K

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

superseded 4.82
company RVI
engine: MIDS 062030
158 kW (215 PS)
Komb.-Nr. 0 402 046 226

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing mark 9,5° after port closing Zyl.1

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	8,5-8,6	14,8-15,0	0,5(0,9)			
600	2,7-2,8	1,3- 1,9	0,8(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca.10	100	min.5,7	250	0,4-0,7
							300	4,1-4,3	550	3,6-3,7
ca. 58	7,5	1205-1215							850	5,1-5,2
	4,0	1275-1305							1150	7,5
	1400	0-1,0				330-445 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1150	147,5-149,5 (144,5-152,5)	1205-1215*	750	132,0-138,0 (129,0-141,0)	100	120,0-140,0	1150	8,5+0,1
					300	18,0- 24,0	350	7,0+0,4
			500	80,0-86,0 (77,0-89,0			750	7,7+0,2
						220 (100)	500	7,2+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

F4

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

F4

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8b

5. Edition En

PES 6 P 120 A 320 RS 417 RQV 300-1200 PA 527 K

superseded 8.81
company: RVI
engine: MIDS 062030
158 kW (215 PS)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings Port closing mark 9,5° after port closing

Port closing at prestroke 2,8 - 2,9 (2,75- 2,95) mm (from BDC) Zyl. 1

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	9,3-9,4	15,4 - 15,6	0,5(0,9)			
300	4,1-4,3	1,8 - 2,4	0,5(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 10	100	min. 5,7	250	0,4-0,7
ca. 60	8,3 4,0 1500	1240-1250 1330-1360 0-1,0				330-445 (3a)	300	4,1-4,3	570 880 1200	3,6-3,8 5,3-5,4 8,0

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1200	154,0-156,0 (151,0-159,0)	1240-1250*	800	140,5-146,5 (137,5-149,5)	100	130,0-150,0	1200 350	9,3+0,1 7,7+0,2
			500	82,0- 88,0 (79,0- 90,0)	300	18,0- 24,0 100-220 (80-240)	750	8,5+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.82

F5

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E5

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 IHC 5,8t
2. Edition
En

Testoil-ISO 4113

VE 6/12 F 1350 R64
0 460 426 016

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

supersedes: 6.82
company: IHC
engine: D 358/PC 11

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/.

Pre-stroke setting mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1100	5,0-5,4	mm		
1.2 Supply pump pressure	1100	5,4-6,0	bar (kgf/cm²)		
1.3 Full-load delivery without charge-air pressure	1150	84,0-85,0	cm³/1000 strokes		3,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	500	14,5-20,5	cm³/1000 strokes		3,5
1.5 Start	100	min.100,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1450	9,0-17,0	cm³/1000 strokes		
1.7 Load-dependent start of delivery	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	600	1100	1250
	mm	1,6-2,4(1,3-2,7)	(4,5-5,9)	5,5-6,3(5,2-6,6)
2.2 Supply pump	n = rev/min	400		1350
	bar (kgf/cm²)	2,7-3,3		6,3-6,9
Overflow delivery	n = rev/min	500		1350
	cm³/10 s	55-138(40-153)		55-138(40-158)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1510	0		
	1450	9,0-17,0	(8,0-18,0)	
	1400	44,0-50,0	(42,0-52,0	
	1300	80,0-83,0	(78,5-84,5)	
	1150		(81,5-87,5)	
	800	77,0-81,0	(76,0-82,0)	
	500	63,0-68,0	(61,8-69,2)	
switch-off	1350	0		
Idle stop	520-570	0		
	500		(12,5-22,5)	
End stop	250	min. 100		
	350	max. 80		

2.4 Solenoid — max. cut-in voltage xxxx min. 10,0 V
test voltage xxxxxxxxxx rated voltage 12V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,0-1,2
SVS	max.6,0
A XK	20,2-22,2
B XL	15,8-19,8

Observations

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

F6

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 PER 5,8b3
2. Edition

En

Testoil-ISO 4113

VE 6/12 F 1300 L 73
0 460 426 020

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

superseded 6.82
company: Perkins.
engine: T 6.354.4

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,3 mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	600	3,1-3,5	mm	0,75	
1.2 Supply pump pressure	600	3,4-4,0	bar (kgf/cm²)	0,75	
1.3 Full-load delivery without charge-air pressure	1000	92,0-95,0	cm³/1000 strokes	0	
Full-load delivery with charge-air pressure	1000	98,0-99,0	cm³/1000 strokes	0,75	3,5
1.4 Idle speed regulation	300	10,0-14,0	cm³/1000 strokes	0	3,5
1.5 Start	100	min.100,0	cm³/1000 strokes	0	
1.6 Full-load speed regulation	1550	5,0-13,0	cm³/1000 strokes	0,75	
1.7 Load-dependent start of delivery	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device- LDA=0,75 bar	n = rev/min	400	600	800
	mm	0,4-1,2(0,1-1,5)	(2,6-4,0)	3,6-4,4(3,3-4,7)
2.2 Supply pump LDA=0,75 bar	n = rev/min	400		1300
	bar (kgf/cm²)	2,4-3,0		6,9-7,5
Overflow delivery	n = rev/min	500		1300
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press bar (kgf/cm²)
End stop	1550		(4,0-14,0)	0,75
	1480	42,0-48,0	(40,0-50,0)	0,75
	1300	90,0-93,0	(88,5-94,5)	0,75
	1000		(90,5-96,5)	0
	1000		(95,5-101,5)	0,75
	* 700	92,5-96,5	(91,5-97,5)	0,32
	500	85,0-89,0	(83,3-90,7)	0
switch-off	1300	0		
Idle stop	300		(7,0-17,0)	
	350	min.1,0		
	400	max.1,0		
End stop	100	min.100		
	200	max. 85		

2.4 Solenoid

max. cut-in voltage xxx min. 10,0 V
test voltage xxxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	--
KF	5,1-5,3
MS	1,1-1,3
SVS	max.6,0
A XK	20,2-22,2
B XL	10,6-13,9

Observations

Manifold-pressure compensator stroke = 3,5 mm
Correction at the adjusting nut. (46)

F7

BOSCH

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VOL 3,6 n 1
1. Edition
En

VE 6/11 F 1800 L 18
0 460 416 001

supersedes –
company: Volvo
engine:

Overflow temperature 45° C

Testoil-ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,2-3,6	mm	0,74	
1.2 Supply pump pressure	1500	6,0-6,7	bar (kgf/cm²)	0,74	
1.3 Full-load delivery without charge-air pressure	500	47,0-49,0	cm³/1000 strokes	0	
Full-load delivery with charge-air pressure	1500	63,5 [illegible]	cm³/1000 strokes	0,74	3,0
1.4 Idle speed regulation	325	8,[illegible]	cm³/1000 strokes	0	2,0
1.5 Start	≥ 100	min. 72,0	cm³/1000 strokes	0	
1.6 Full-load speed regulation	2040	19,5-25,5	cm³/1000 strokes	0,74	
1.7 Load-dependent start of delivery					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA = 0,74 bar	n = rev/min	1000	1500	1800
	mm	0,7-1,7(0,5-1,9)	(2,7-4,1)	4,5-5,3(4,2-5,6)
2.2 Supply pump LDA = 0,74 bar	n = rev/min	400		1800
	bar (kgf/cm²)	2,0-2,7		6,9-7,6
Overflow delivery	n = rev/min	500		1800
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press bar (kgf/cm²)
End stop	2140-2220	0		0,74
	2120	max. 6,0		0,74
	2040		(18,0-27,0)	0,74
	1800	57,2-59,8	(55,8-61,2)	0,74
	1500		(61,3-66,7)	0,74
	* 500	51,5-53,5	(49,1-55,9)	0,28
	500		(44,6-51,4)	0
switch-off	1800	0		
Idle stop	370-450	0		
	325		(5,5-14,5)	

2.4 Solenoid — max. cut-in voltage xxx min. 10 V
test voltage xxxxxxxxx rated voltage 12V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	–
KF	5,9-6,2
MS	1,5-1,7
SVS	max.4,2
A	5,8-10,8
B	10,4-15,6

Observations

Manifold-pressure compensator stroke = 4,0 mm

F8

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 2,4 f
1. Edition
En

VE 6/10 F 2150 L 105
0 460 406 014

supersedes –
company: VWW
engine: 087 T-LT

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Testoil-ISO 4113

Pre-stroke setting mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	2,3-2,7	mm	0,75	
1.2 Supply pump pressure	1500	5,9-6,5	bar (kgf/cm²)	0,75	
1.3 Full-load delivery without charge-air pressure	600	23,5-24,5	cm³/1000 strokes	0	
Full-load delivery with charge-air pressure	1500	41,5-42,5	cm³/1000 strokes	0,75	
1.4 Idle speed regulation	375	6,0-10,0	cm³/1000 strokes	0	
1.5 Start	100	min. 38,0	cm³/1000 strokes	0	
1.6 Full-load speed regulation	2400	9,0-15,0	cm³/1000 strokes	0,75	
1.7 Load-dependent start of delivery	–				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA = 0,75 bar	n = rev/min	1000	1500	2150
	mm	0,5-1,3(0,2-1,6)	(1,8-3,2)	4,4-5,2(4,1-5,5)
2.2 Supply pump LDA = 0,75 bar	n = rev/min	600		2150
	bar (kgf/cm²)	3,5-4,1		7,6-8,2
Overflow delivery	n = rev/min	600		2150
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2600	max. 3,0		0,75
	2400	9,0-15,0		0,75
	2150	35,0-37,0	(33,7-38,3)	0,75
	1500		(39,7-44,3)	0,75
	750	32,5-33,5	(30,7-35,3)	0,3
	600		(21,0-27,0)	0
switch-off elect.	400	0		
Idle stop	375		(4,0-12,0)	
	450	max. 2,5		
End stop	400	min. 25		
	500	max. 27		

2.4 Solenoid — max. cut-in voltage xxx min. 10 V
~~xxxxxxxx~~ rated voltage 12V.

3. Dimensions

for assembly and adjustment mm

Designation	mm
K	3,2-3,4
KF	6,3-6,6
MS	1,0-1,2
SVS	max.3,8
XK	20,2-22,2
XL	8,6-11,9

Observations
Manifold-pressure compensator stroke = 4,5 mm
Correction at the adjusting nut. (46)

F9

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F9

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 2,4e

1. Edition

En

VE 6/10 F 2150 L 104
0 460 406 013

supersedes -
company: VWW
engine: 087-LT

Overflow temperature 45° C

Testoil-ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting - mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	2,8-3,2	mm		
1.2 Supply pump pressure	1500	5,5-6,1	bar (kgf/cm²)		
1.3 Full-load delivery without charge-air pressure	1500	28,0-29,0	cm³/1000 strokes		3,0
Full-load delivery with charge-air pressure	-	-	cm³/1000 strokes		
1.4 Idle speed regulation	375	6,0-10,0	cm³/1000 strokes		3,0
1.5 Start	100	min.38,0	cm³/1000 strokes		
1.6 Full-load speed regulation	2400	9,0-15,0	cm³/1000 strokes		
1.7 Load-dependent start of delivery	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2150
	mm	0,7-1,5(0,4-1,8)	(2,3-3,7)	4,9-5,7(4,6-6,0)
2.2 Supply pump	n = rev/min	600		2150
	bar (kgf/cm²)	3,0-3,6		7,3-7,9
Overflow delivery	n = rev/min	600		2150
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2600	max. 3,0		
	2400		(8,0-16,0)	
	2150	23,0-25,0	(21,7-26,3)	
	1500		(26,2-30,8)	
	750	25,0-28,0	(23,5-29,5)	
switch-off elect.	400	0		
Idle stop	375		(4,0-12,0)	
	500	max. 2,0		
End stop	400	min. 25		
	500	max. 27		

2.4 Solenoid — max. cut-in voltage xxx min. 10 V
xxxxxxxxxxxx rated voltage 12V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	6,4-6,7
MS	1,4-1,6
SVS	max.4,2
A XK	20,2-22,2
B XL	8,0-11,4

Observations

F10

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung

⑥

Test Specifications Distributor-type Fuel-injection Pumps

En

46

WPP 001/4 REN 2,0g

1. Edition

VE 4/9 F 2100 R 97-1

0 460 494 115

supersedes

company: Renault

engine: 852-718

Testoil-ISO 4113

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1400	4,4-4,8	mm		
1.2 Supply pump pressure	1400	4,8-5,4	bar (kgf/cm²)		
1.3 Full-load delivery without charge-air pressure	1400	38,0-39,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	-	-	cm³/1000 strokes		
1.4 Idle speed regulation	400	7,5-11,5	cm³/1000 strokes		2,5
1.5 Start	100	min. 52	cm³/1000 strokes		
1.6 Full-load speed regulation	2250	14,0-20,0	cm³/1000 strokes		
1.7 Load-dependent start of delivery	-				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1400	2000
	mm	2,6-3,4(2,3-3,7)	(3,9-5,3)	6,2-7,0(5,9-7,3)
2.2 Supply pump	n = rev/min	1000		2000
	bar (kgf/cm²)	3,8-4,4		6,2-6,8
Overflow delivery	n = rev/min	500		2100
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2450	max. 1,0		
	2350	1,0-5,0		
	2250		(13,0-21,0)	
	2100	33,1-35,1	(31,8-36,4)	
	1400		(36,2-40,8)	
	1000	35,3-38,3	(34,5-39,1)	
	600	32,5-35,5	(31,0-37,0)	
switch-off	21000	0		
Idle stop	400		(5,5-13,5	
	650	max. 5,0		
End stop	280	min. 45		
	400	max. 45		

2.4 Solenoid	
	max. cut-in voltage xxx min. 10 V
	test voltage xxxxxxxxx rated voltage 12V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-6,0
MS	1,4-1,6
SVS	max.3,8
A XK	20,2-22,2
B XL	7,9-11,2

Observations

F11

F1A

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung.

1.83

Test Specifications Distributor-type Fuel-injection Pumps

En

WPP 001/4 REN 2,0 e
3. Edition

Testoil-ISO 4113

VE 4/9 F 2400 R 95
0 460 494 105

supersedes 12.82
company: Renault
engine: F 8 M

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting – mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1400	4,1-4,5	mm		
1.2 Supply pump pressure	1400	4,9-5,5	bar (kgf/cm²)		
1.3 Full-load delivery without charge-air pressure	1000	30,7-31,7	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	–	–	cm³/1000 strokes		
1.4 Idle speed regulation	425	6,0-10,0	cm³/1000 strokes		2,5
1.5 Start	100	min. 42,0	cm³/1000 strokes		
1.6 Full-load speed regulation	2650	10,5-16,5	cm³/1000 strokes		
1.7 Load-dependent start of delivery	1400	–			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1400	2000	2400
	mm	2,3-3,1(2,0-3,4)	(3,6-5,0)	6,3-7,1(6,0-7,4)	7,0-7,7(6,6-8,0)
2.2 Supply pump	n = rev/min	600			2400
	bar (kgf/cm²)	2,5-3,1			7,7-8,3
Overflow delivery	n = rev/min	600			2400
	cm³/10 s	55-138(40-153)			55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2750	max.		
	2650		(9,5-17,5)	
	2500	21,0-29,0	(21,0-29,0)	
	2400	27,5-30,1	(26,5-31,1)	
	2100	28,9-31,3	(27,8-32,4)	
	1400	31,7-33,7	(30,4-35,0)	
	1000		(28,9-33,5)	
	600	25,2-28,2	(23,7-29,7)	
switch-off	2400	0		
Idle stop	650	0		
	600	0,2-5,2		
	425		(4,0-12,0)	
End stop	330	min. 30,0		
	500	max. 29,0		
2.4 Solenoid	max. cut-in voltage	xxx min. 10,0 V		
	test voltage	xxxxxxxxxx rated voltage 12V.		

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	2,8
XK	18,7-20,7
XL	9,5-12,8

Observations

F12

F12

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 OPE 2,3 c
1. Edition
En

VE 4/9 F 2000 R 37-2

0 460 494 126

supersedes
company: Vauxhall
engine:

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Testoil-ISO 4113

Pre-stroke setting mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	2000	7,9-8,3	mm		
1.2 Supply pump pressure	2000	6,9-7,5	bar (kgf/cm²)		
1.3 Full-load delivery without charge-air pressure	1250	41,5-42,5	cm³/1000 strokes		2,0
Full-load delivery with charge-air pressure	-	-	cm³/1000 strokes		
1.4 Idle speed regulation	300	6,0-10,0	cm³/1000 strokes		2,0
1.5 Start	100	min. 54,0	cm³/1000 strokes		
1.6 Full-load speed regulation	2440	11,0-17,0	cm³/1000 strokes		
1.7 Load-dependent start of delivery	2000	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	600	1250	2000
	mm	1,2-2,2(1,0-2,4)	4,4-5,2(4,1-5,5)	(7,4-8,8)
2.2 Supply pump	n = rev/min	600	1250	
	bar (kgf/cm²)	3,6-4,2	5,1-5,7	
Overflow delivery	n = rev/min	600		2000
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2520	max. 12,0		
	2440		(10,0-18,0)	
	2000	34,2-36,8	(33,2-37,8)	
	1250		(39,7-44,3)	
	600	34,5-37,5	(33,0-39,0)	
switch-off	2000	0		
Idle stop	500	max. 1,0		
	350	min. 2,0		
	300		(4,0-12,0)	
End stop	350	min. 38,0		
	450	max. 38,0		

2.4 Solenoid — max. cut-in voltage xxx min. 10,0 V
test voltage xxx rated voltage 12V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,4-5,7
MS	1,7-1,9
SVS	max.3,4
XK	20,2-22,2
XL	8,5-10,8

Observations

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

F13

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 IHC 6,6a
1.. Edition

En

Testoil-ISO 4113

VE 6/12 F 1250 R 38 (P)

0 460 426 007 008

supersedes
company: IHC
engine: DT 402/3994

Setting of the pointer at a stroke of 1 mm in relation to outlet "A". Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,4 mm ± 0,02(0,04) mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1000	3,5-4,1	mm		
1.2 Supply pump pressure	1000	4,9-5,5	bar (kgf/cm²)		
1.3 Full-load delivery without charge-air pressure	900	117,5-118,5	cm³/1000 strokes		2,5(4,5)
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	500	15,0-21,0	cm³/1000 strokes		2,5(4,5)
1.5 Start	100	min.95,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1300	56,0-64,0	cm³/1000 strokes		
1.7 Load-dependent start of delivery	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	600	1000	1200
	mm	1,3-2,1(1,0-2,4)	(3,1-4,5)	4,6-5,4(4,3-5,7)
2.2 Supply pump	n = rev/min	400		1250
	bar (kgf/cm²)	3,2-3,8		5,6-6,2
Overflow delivery	n = rev/min	500		1250
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1370-1420	0		
	1300		(55,0-65,0)	
	1230	108,5-111,5	(107-113)	
	900		(115-121)	
	700	97,0-101,0	(96,0-102,0)	
	500	92,0-96,0	(90,2-97,8)	
switch-off	1250	0		
Idle stop	520-570			
	500		(13,0-23,0)	
End stop	260			
	380			

2.4 Solenoid — max. cut-in voltage — test voltage

3. Dimensions

for assembly and adjustment

Designation	mm
K	--
KF	5,4-5,6
MS	0,8-1,0
SVS	4,6-6,0
A XK	20,2-22,2
B XL	9,6-12,9

Observations

F14

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 14,2 d
1. Edition
En

PE 8 P 120 A 920/4 LS 7008 RQV 200-950 PA 547-1

supersedes –
company Scania
engine DSC 1401
Komb.-Nr. 0 402 648 807

Values only applx to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 015

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,5 - 4,6 (4,45-4,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	14,2+0,1	20,1-20,3	0,7(0,9)			3,3±0,1
225	4,6-4,8	1,4-1,8	0,3(0,6)			(3,0-3,5) **

Adjust the fuel delivery from each outlet according to the values in [ ]

** Due to smoothing of the sealing edge, the initial spring tension with a new delivery-valve holder must be adjusted to 3,0 mm.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	990	15,2-17,8	-	-	-	ca. 9	100	min.5,9	150	0,5-0,9
ca. 60	13,2	990-1000					225	4,4-4,6	420	3,0-3,5
	4,0	1115-1145					310-370	= 2,0	680	4,8-5,1
	1250	0-1,0				(3a)			950	7,4

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 700	0,9 bar 201,0-203,0 (198,0-206,0	990-1000 *	LDA 950	0,9 bar 194,0-202,0 (192,0-206,0)	100	250,0-300,0 bei 20,0 21,0 mm RW	-	-
			LDA 500	0 bar 156,0-160,0 (154,0-162,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 8 P..LS 7008 +RQV..PA 547-1	0,35	0,90 0 0,24	13,6 - 13,7 14,2 - 14,3 11,5 - 11,6 12,1 - 12,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 i 2
1. Edition
En

PES 6 P 110 A 720/3 RS 3036 RQV 300/450-950 PA 375 KR
Komb.-Nr. 0 402 036 713

supersedes -
company: MACK
engine ETAZ 673 AEXP

Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,4-2,5 (2,35-2,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	15,1+0,1	23,1 - 23,3	0,4			
300	5,0-5,2	1,2-2,2	0,4			

Adjust the fuel delivery from each outlet according to the values in [ ]

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	970	16,2-17,8	-	-	-	ca. 18,5	250	9,8-11,3	250	0,2-1,2
ca. 63	14,1 4,0 1200	990-1000 1115-1145 0 - 1,0				(3a)	300 400 575-635=2,0	7,9-8,1 3,8-5,2	480 710 950	3,8-4,3 5,5-5,9 8,2

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
900	230,5-232,5	990-1100 *	725	231,5-234,5	100	110,0-170,0 = ca. 12,0 mm RW	900	15,1
			600	212,5-215,5			725	15,2+0,1
							700	15,0+0,1
							600	max.14,5
							500	13,9+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

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3.83

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 4,5 a
2. Edition
En

PES 4 MW 100/320 RS 1102 RQV 300-1150 MW 39-1

0 403 444 103

supersedes 11.82
company: Volvo-BM
engine: TD45
70 kW (95 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC) RW 9 - 12 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,0+0,1	8,5 - 8,7	0,35(0,6)			
300	6,4-6,5	1,3 - 1,7	0,35(0,55)			
1000	11,0+0,1	-	0,55(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1150 1400	15,2-17,8 0 - 1,0				ca. 11	100 300	min.7,3 5,6-5,7		
ca.46	10,0 4,0	1190-1200 1230-1260				320-520 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
700	85,0-87,0 (83,0-89,0)	1190-1200*	1000	88,0-92,0 (86,0-94,0)	100	max. 140,0 100-220 (80-250)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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F18

Test Specifications Fuel Injection Pumps and Governors

(1) WPP 001/4 VOL 4,5 d
1. Edition
En

PES 4 MW 100/320 RS 1102
RQV 300-1200 MW 39-2
0 403 444 104

supersedes –
company: Volvo
engine: TD 45
82,5 kW (112 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC) RW 9,0 - 12,0

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,0+0,1	9,5 - 9,7	0,35(0,6			
300	6,5-6,6	1,3 - 1,7	0,35(0,55)			
1000	11,0+0,1		0,55(0,7			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1200 1450	15,2-17,8 0 - 1,0				ca.12 (3a)	100 300 400-550 = 2,0	min.8,1 6,5-6,6		
ca.48	10,0 4,0	1240-1250 1290-1320								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
700	95,0-97,0 (93,0-99,0)	1240-1250*	1000	94,0-98,0 (92,0-100,0)	100	19 - 21 mm RW max. 140 100-220 (80-250)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

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Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 OMB 4,4 d 1
3. Edition
En

Testoil-ISO 4113

PES 4 A 90 D 410 RS 2195 Z RSV 325-1050 A 4 B 1079 DL

supersedes 11.74
company: OMB
engine: CO 3

1 - 3 - 4 - 2
0 -90 -180-270

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,10-2,30) 2,15-2,25 mm (from BDC) RW 10,5

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	11,3	7,9 - 8,0	0,3(0,45)			
	+0,1					
325	6,4-6,6	0,9 - 1,5	0,2(0,4)			
600	---	C.Sp. 4-5	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca.26	325	6,0	1050	11,3-11,4
	X	4,5					100	min.19,0	500	11,3-11,5
ca.63 (5)	1090-1100	= 10,3					325	6,4-6,6		
	1135-1145	= 4,0					455-515	=2,0	375	11,5-12,1
	1300	= 0,3-1,7					575	0 - 1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
1050	79,5 - 80,5 (77,5 - 82,5)		600	69,5 - 72,5 (67,5 - 74,5)	100	19,0-21,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.80

F20

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 PEN7,0 c 1
2. Edition

En

PE6P100A320RS291Z RSV200-1200P1/305R

Komb.-Nr. 0 401 876 264

supersedes 10.82
company: Volvo-Penta
engine: D 70 B/PP

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC) RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	8,5-8,6	5,6-5,8	0,3(0,6)			
225	5,8-6,0	1,0-1,4	0,25(0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.22	225	5,4	-	-
	X=5,0						100	min.20,0		
ca.64	7,5	1240-1250					225	5,8-6,0		
(5)	4,0	1260-1290					335-395	=2,0		
	1400	0,3- 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
700	56,0-58,0 (54,0-60,0)	1240-1250*	-	-	100	210,0-260,0 = 20,0-21,0mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.83

F21

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 11,4 o
2. Edition
En

Testoil-ISO 4113

PES 6 P 120 A 820 LS 3095 RSV 350-750 P1/487

supersedes 4.82

company Daimler-Benz

engine: OM 407 A
169 kW (230 PS)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 (3,95-4,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
730	12,4+0,1	19,6 - 19,8	0,5(0,8)			
350	5,7-5,9	3,0 - 4,0	0,8(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	700	0,3-1,8	-	-	-	-	-	-	-	-
	x =	2,25								
ca. 33	11,4	745-760								
(5)	4,0	765-795								
	900	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
730	196,0-198,0 (193,0-201,0)	745-760 *	-	-	100	170,0-190,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

11.82

F22

PE 8 P 120 A 320 LS 3807 RQ 300/1150 PA 546

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45° ± 0,5° (± 0,75°)

supersedes 10.82
company: Daimler-Benz
engine: OM 422 A
243 kW (330 PS)
Komb.-Nr. 0 401 848 733

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 (3,95-4,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,7+0,1	15,7-15,9	0,5(0,9)			
300	5,2-5,4	1,2-1,8	0,8(1,2)			
600	----	C, 1 u. 2	0,7(1,1)			
900/500	----	C, 4 u. 5	0,7(1,1)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	9,7	1200-1215	300	4,5	100	min.6,0	1150	10,7-10,8
				4,0	1235-1270			300	4,4-4,6	600	11,4-11,5
VH =	max. 46°							340-380	= 2,0	900	10,8-11,0

Torque-control travel on flyweight assembly dimension a = 0,2 mm

Speed regulation: At 1200-1215 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
LDA 1150	0,7 bar 156,5-158,5 (153,5 - 161,5)	-	LDA 900	0,7 bar 164,0 - 168,0 (161,0 - 171,0)	100	120,0 - 140,0
LDA 600	0,7 bar 166,0 - 172,0 (163,0 - 175,0)		LDA 500	0 bar 137,0 - 139,0 (134,0 - 142,0)		

Checking values in brackets

4.83

F23

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PE 8 P..LS 3807 + ..PA 546	0,47	0,70 0 0,40	11,2-11,3 11,4-11,5 10,5-10,6 10,6-10,7

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 IHC 7,6 g
2. Edition
En

PES 6 MW 100/320 RS 1108
RQV 350-1200 MW 43-5
0 403 446 139

DHK 1 688 901 016
207 + 3 bar

supersedes 12.82
company: IHC
engine: DT 466 B
121,4 kW (165 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 (2,95-3,15) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	10,5+0,1	8,3-8,5	0,35(0,6)			
350	5,8-5,9	1,6-2,0	0,35(0,55)			
1200	10,5+0,1		0,65(0,7)			
500	9,2-9,3					

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	8,0 0-1	1360-1400 1460	-	-	-	ca.14	100 350	min. 9,0 5,8 -5,9		
ca.58,5	4,0	1360-1370				360-640 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2) rev/mn 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a) rev/mn 3	Fuel delivery characteristics high idle speed (5a) (5b) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6) rev/min 6	cm³/1000 strokes 7	Torque-control travel (5) rev/mn 8	Control rod travel mm 9
LDA 800	0,9 bar 83,0-85,0 (81,0-87,0)		LDA 1200	0,9 bar 88,5-92,5 (86,5-94,5)	100	19-21 mm RW 140-180		
			LDA 500	0 bar 59,0-61,0 (57,0-63,0)	220-280 (210-290)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

G1

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel-diminution difference mm (1)
RS 1108 ÷ RQV.. MW 43-5	0,9		10,5 - 10,6
		0	9,2 - 9,3
		0,2	9,7 - 9,8
		0,34	10,2 - 10,3

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Please note:

- Carry out pump adjustment only with overflow valve 1 417 413 040 and IH hose with throttle 1.57 mm diameter.
- Set locking device before testing position of sliding device.
- In unlocked condition do not operate at a speed higher than n = 500 min^{-1}.
- Set lower idle speed at stop screw.
- Set shutoff stop 1.5 - 2.0 mm in front of the stop.

Test Specifications Fuel Injection Pumps and Governors

WPP 00 1/4 MB 3,0 m

2. Edition En

PES 5 MW 55/320 RS 16
RW 375/2200 MW 28-1
0 403 245 013
0 403 245 014 - Sales model

supersedes 2.80
company Daimler Benz
engine OM 617 A

Take note of important instructions on the reverse before starting test!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,10-2,20 mm (from BDC) 21mm Control rod travel

Without ADA (2,05-2,25)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	13,5+0,1	5,15 - 5,25	0,25(0,3)			
375	5,2-5,3	0,6 - 0,7	0,10(0,15)			
1600			0,25(0,3)			
2180			0,25(0,3)			

Set uniform delivery according to the values in ☐ Checking values in brackets

B. Governor Settings without ADA

Lower rated speed: Degree of deflection of control lever 1	Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4	Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel 7	Rotational speed rev/min 8	Control rod travel mm 9
27-31 ①	min.11	100	69 ⑦	12,1-12,3	2180	⑫	100	20,5-21,5
②	max.11	320	⑧			⑬		
③	5,2-5,3 **	375	⑨	11,0	2300-2320	⑭	1600	13,1-13,3
④	-	-	⑩	4,0	2620-2720		1000	13,5-13,6
⑤	-	-	⑪	0,0-1,0	2950	⑥ Switching point	260-310(240-330)	

C. Settings for Fuel Injection Pump with Governor Mounted without ADA

Full-load delivery ⑲ Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation ⑧a rev/min 3	Variations in fuel delivery ⑰ ⑱ rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2290-2330)	1600	51,5-53,0 (50,5-54,5)	100	min. 55,0	6,0 ⑫a
			1000	51,5-52,5 (50,5-53,5)	375	6,0 - 7,0 (5,5 - 9,5)	1,0 (1,5) ⑮
					2550	24,0-30,0 (23,0-31,0)	2,5 (3,0) ⑯

Checking values in brackets

* 1 mm less control rod travel than in Column 2

11.82

G3

G3

Testing with ALDA

MB 3.0 n

Point	min^{-1}	cm^3/1000 H	RW	Pressure (absolute)
18	1000	51,5 - 52,5 (50,5 - 53,5)	13,5 - 13,6	1733 mbar(1300 mmHg)
18a	*** 1000	41,0 - 43,0 (40,0 - 44,0)	-	1067 mbar(800 mmHg)
19	2180	50,0 - 52,0 (49,0 - 53,0)	12,1 - 12,3	1733 mbar (1300 mmHg)
12a	100	min. 55	20,5 - 21,5	1733 mbar (1300 mmHg)
15	375	6.0 - 7.0 (5.5 - 9.5)	5,2 - 5,3	987 mbar (740 mmHg)

1. Adjusting the idle

Test supersedes Section 4.1 of test instructions VDT-W-420/300 Suppl. 2, Ed. 2.

Set the control lever to an angle of 69^{o}. Operate the fuel-injection pump at 1000 min^{-1}.
Screw in the spring retainer until a control-rod travel of 13,5 - 13,6 mm is reached.

Set the control lever to an angle of 49^{o}. Operate the fuel-injection pump at 1000 min^{-1}. Control-rod travel 8,8 - 9,5 must be reached.

2. Adjusting the lower rated speed

Text supersedes Section 4.3 of test instructions VDT-W 420/300 Suppl. 2, Ed. 2.

Operate the fuel-injection pump at n = 800 min^{-1}. Take back the control lever until a control-rod travel of 1.0 - 1.3 mm is reached.

The resulting deflection of the control lever must be within the allowable tolerance. Fix the control lever in this position. Drive the fuel-injection pump at a speed according to Point 2 Section B of the test specification sheet. Set regulation at adjusting screw (28).

3. Adjusting the idle-speed auxiliary spring (70)

** Position the idle-speed auxiliary spring in contact as the characteristic curve levels off at n=520-550 min^{-1}.

4. Adjusting the sensing lever

Place the control lever against the full-load stop.
Operate the fuel-injection pump at n = 375 min^{-1}. Adjust the sensing lever so that the control-rod travel is 0.1 (0.1 - 0.2) mm above the full-load control-rod travel at n = 1000^{-1}.

5. *** Correct the quantity of fuel injected at the correction screw of the ALDA aneroid box. Max. correction $\pm$ 0.75 mm control-rod travel.

6. Pin projection = 16.65 $\pm$ 0.1 mm

7. Shutoff check: Operate the fuel-injection pump at n = 200 min^{-1}. Force the control rod through the spring-loaded idle stop. The resulting control-rod travel must be max. 5 mm.

8. Test the pneumatic shutoff: Control lever in idle position. Operate the fuel-injection pump at n = 375 min^{-1}. At 450 mbar (338 mmHg) (vacuum) the control rod must move briskly to control-rod travel 0 mm.

9. Control-lever range idle - full load = 38 - 42°.

G5

En G5

Test Specifications Fuel Injection Pumps and Governors

Testoil-ISO 4113

PES 5 MW 55/320 RS 16 RW 375/2200 MW 28-3
0 403 245 020
0 403 245 021 - Sales model

supersedes -
company Daimler-Benz
engine OM 617 A-USA
92 kW (125 PS)

Take note of important instructions on the reverse before starting test!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,10-2,20 (2,05-2,25) mm (from BDC) 21 mm Control rod travel

Without ADA

Start-of-delivery adjustment and blocking 19,5° after start-of-delivery cylinder 1.

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	13,5+0,1	5,15-5,25	0,25(0,3)			
375	5,2-5,3	0,6-0,7	0,1 (0,15)			
1600			0,25(0,3)			
2180			0,25(0,3)			

Set uniform delivery according to the values in ☐ Checking values in brackets

B. Governor Settings

without ADA

Lower rated speed: Degree of deflection of control lever 1	Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4	Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel: 7	Rotational speed rev/min 8	Control rod travel mm 9
27-31 (1)	min.11	100	69 (7)	12,1-12,3	2180	(12)	100	20,5-21,5
(2)	max.11	320	(8)	11,0	2300-2320	(13)	1600	13,1-13,3
(3)	5,2-5,3	375	(9)	4,0	2620-2720	(14)	1000	13,5-13,6
(4)	**		(10)	0,0-1,0	2950			
(5)	-	-	(11)	-	-	(6)	Switching point 260-310 (240-330)	
	-	-						

C. Settings for Fuel Injection Pump with Governor Mounted

without ADA

Full-load delivery (19) Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	Full-load speed regulation (8a): rev/min 3	Variations in fuel delivery (17)(18): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle: rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2290-2330)	1600	51,5-53,0 (50,5-54,5)	100	min. 55,0	6,0 (12a)
					375	6,0-7,0 (5,5-9,5)	1,0 (1,5)
			1000	51,5-52,5 (50,5-53,5)	2550	24,0-30,0 (23,0-31,0)	2,5 (3,0) (15)
							(16)

Checking values in brackets

* 1 mm less control rod travel than in Column 2

2.83

G6

Testing with ALDA

MB 3.0 n

Point	min^{-1}	cm^3/1000 H	RW	Pressure (absolute)
18	1000	51,5 - 52,5 (50,5 - 53,5)	13,5 - 13,6	1733 mbar(1300 mmHg)
18a	*** 1000	41,0 - 43,0 (40,0 - 44,0)	-	1067 mbar(800 mmHg)
19	2180	50,0 - 52,0 (49,0 - 53,0)	12,1 - 12,3	1733 mbar (1300 mmHg)
12a	100	min. 55	20,5 - 21,5	1733 mbar (1300 mmHg)
15	375	6.0 - 7.0 (5.5 - 9.5)	5,2 - 5,3	987 mbar (740 mmHg)

1. Adjusting the idle

Test supersedes Section 4.1 of test instructions VDT-W-420/300 Suppl. 2, Ed. 2.

Set the control lever to an angle of 69^0. Operate the fuel-injection pump at 1000 min^{-1}.
Screw in the spring retainer until a control-rod travel of 13,5 - 13,6 mm is reached.

Set the control lever to an angle of 49^0. Operate the fuel-injection pump at 1000 min^{-1}. Control-rod travel 8,8 - 9,5 must be reached.

2. Adjusting the lower rated speed

Text supersedes Section 4.3 of test instructions VDT-W 420/300 Suppl. 2, Ed. 2.

Operate the fuel-injection pump at n = 800 min^{-1}. Take back the control lever until a control-rod travel of 1.0 - 1.3 mm is reached.

The resulting deflection of the control lever must be within the allowable tolerance. Fix the control lever in this position. Drive the fuel-injection pump at a speed according to Point 2 Section B of the test specification sheet. Set regulation at adjusting screw (28).

3. Adjusting the idle-speed auxiliary spring (70)

** Position the idle-speed auxiliary spring in contact as the characteristic curve levels off at n=520-550 min^{-1}.

4. Adjusting the sensing lever

Place the control lever against the full-load stop.
Operate the fuel-injection pump at n = 375 min^{-1}. Adjust the sensing lever so that the control-rod travel is 0.1 (0.1 - 0.2) mm above the full-load control-rod travel at n = 1000^{-1}.

5. *** Correct the quantity of fuel injected at the correction screw of the ALDA aneroid box. Max. correction $\pm$ 0.75 mm control-rod travel.

6. Pin projection = 16.65 $\pm$ 0.1 mm

7. Shutoff check: Operate the fuel-injection pump at n = 200 min^{-1}. Force the control rod through the spring-loaded idle stop. The resulting control-rod travel must be max. 5 mm.

8. Test the pneumatic shutoff: Control lever in idle position. Operate the fuel-injection pump at n = 375 min^{-1}. At 450 mbar (338 mmHg) (vacuum) the control rod must move briskly to control-rod travel 0 mm.

9. Control-lever range idle - full load = 38 - 42°.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 3,0 t 1
1. Edition
En

PES 5 MW 55/320 RS 16 RW 375/2200 MW 29-1

supersedes

company Daimler-Benz
engine: OM 617A-USA
92 kW (125 PS)

0 403 245 022
0 403 245 023 - Sales model
Take note of important instructions on the reverse before starting test!

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Start-of-delivery adjustment and blocking 19,5° after start-of-delivery cylinder 1.

Port closing at prestroke 2,10-2,20 (2,05-2,25) mm (from BDC) 21 mm Control rod travel

Without ADA

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	13,5+0,1	5,15-5,25	0,25(0,3)			
375	5,2-5,3	0,6-0,7	0,1 (0,15)			
1600			0,25(0,3)			
2180			0,25(0,3)			

Set uniform delivery according to the values in ☐. Checking values in brackets

B. Governor Settings

without ADA

Lower rated speed: Degree of deflection of control lever 1	Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4	Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel 7	Rotational speed rev/min 8	Control rod travel mm 9
27-31 ①	min.11	100	69 ⑦	12,1-12,3	2180	⑫	100	min. 55
②	max.11	320	⑧	11,0	2300-2320	⑬	1600	13,1-13,3
③	5,2-5,3	375	⑨	4,0	2620-2720	⑭	1000	13,5-13,6
④	**		⑩	0,0-1,0	2950			
⑤	-	-	⑪	-	-	㉖	Switching point 260-310(240-330)	

C. Settings for Fuel Injection Pump with Governor Mounted

without ADA

Full-load delivery ⑲ Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation ⑧a rev/min 3	Variations in fuel delivery ⑰ ⑱ rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2290-2330)	1600	51,5-53,0 (50,5-54,5)	100	min. 55,0	6,0 ⑫a
					375	6,0-7,0 (5,5-9,5)	1,0 (0,5-1,5) ⑮
			1000	51,5-52,5 (50,5-53,5)	2550	24,0-30,0 (23,0-31,0)	2,5 (3,0) ⑯

Checking values in brackets

* 1 mm less control rod travel than in Column 2

2.83

BOSCH Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung

Testing with ALDA

MB 3.0 n

Point	min^{-1}	cm^3/1000 H	RW	Pressure (absolute)
18	1000	51,5 - 52,5 (50,5 - 53,5)	13,5 - 13,6	1733 mbar(1300 mmHg)
18a	*** 1000	41,0 - 43,0 (40,0 - 44,0)	-	1067 mbar(800 mmHg)
19	2180	50,0 - 52,0 (49,0 - 53,0)	12,1 - 12,3	1733 mbar (1300 mmHg)
12a	100	min. 55	20,5 - 21,5	1733 mbar (1300 mmHg)
15	375	6.0 - 7.0 (5.5 - 9.5)	5,2 - 5,3	987 mbar (740 mmHg)

1. Adjusting the idle

Test supersedes Section 4.1 of test instructions VDT-W-420/300 Suppl. 2, Ed. 2.

Set the control lever to an angle of 69^{o}. Operate the fuel-injection pump at 1000 min^{-1}.
Screw in the spring retainer until a control-rod travel of 13,5 - 13,6 mm is reached.

Set the control lever to an angle of 49^{o}. Operate the fuel-injection pump at 1000 min^{-1}. Control-rod travel 8,8 - 9,5 must be reached.

2. Adjusting the lower rated speed

Text supersedes Section 4.3 of test instructions VDT-W 420/300 Suppl. 2, Ed. 2.

Operate the fuel-injection pump at n = 800 min^{-1}. Take back the control lever until a control-rod travel of 1.0 - 1.3 mm is reached.

The resulting deflection of the control lever must be within the allowable tolerance. Fix the control lever in this position. Drive the fuel-injection pump at a speed according to Point 2 Section B of the test specification sheet. Set regulation at adjusting screw (28).

3. Adjusting the idle-speed auxiliary spring (70)

** Position the idle-speed auxiliary spring in contact as the characteristic curve levels off at n=520-550 min^{-1}.

4. Adjusting the sensing lever

Place the control lever against the full-load stop.
Operate the fuel-injection pump at n = 375 min^{-1}. Adjust the sensing lever so that the control-rod travel is 0.1 (0.1 - 0.2) mm above the full-load control-rod travel at n = 1000^{-1}.

5. *** Correct the quantity of fuel injected at the correction screw of the ALDA aneroid box. Max. correction $\pm$ 0.75 mm control-rod travel.

6. Pin projection = 16.65 $\pm$ 0.1 mm

7. Shutoff check: Operate the fuel-injection pump at n = 200 min^{-1}. Force the control rod through the spring-loaded idle stop. The resulting control-rod travel must be max. 5 mm.

8. Test the pneumatic shutoff: Control lever in idle position. Operate the fuel-injection pump at n = 375 min^{-1}. At 450 mbar (338 mmHg) (vacuum) the control rod must move briskly to control-rod travel 0 mm.

9. Control-lever range idle - full load = 38 - 42^{o}.

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 PEN 10,0 b

5. Edition

En

Testoil-ISO 4113

PE 6 P 100 A 320 RS 101 Z (1) RSV 200-900 P 4/305 R
/ 320 RS 101 (2)

supersedes 4.81
company Volvo-Penta
engine TMD 100 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,60-2,70 (2,55-2,75) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery 1 cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery 2 cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	$13,5^{+0,1}$	15,6 - 15,8	0,3(0,6)	$12,7^{+0,1}$	14,5 - 14,7	880
200	5,9-6,1	1,0 - 1,4	0,2(0,4)	5,5-5,7	1,1 - 1,5	200
						2,5 ± 0,1 ** (max.2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in [ ]

**In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly. RSV..305 R (Z)

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 x = 4,75		ca. 22	200	5,5	880	13,5+0,1
					100	min. 20,0	340	13,5+0,3
ca. 56 (2a)	940-950=12,5				200	5,9-6,1	240	14,7+0,9
	990-1020=4,0				255-310	= 2,0		
	1100=	0,3-1,7						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
700	156,0 - 158,0 (154,0 - 160,0)	940-950*			100	20 - 21		
					200	220 - 250 11 - 15**		

Checking values in brackets

* 1 mm less control rod travel than col 2

4.83

G12

The numbers denote the sequence of the tests

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800 0,3-1,0 x = 4,75					ca. 22	200	5,1		
ca. 55 ②	940-950 = 11,7 990-1020= 4,0 1100=0,3-1,7						100 200 260-310	min. 20,0 5,5-5,7 = 2,0		

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp. 40°C (104°F)		⑥ Rotational-speed limitat.	③a Fuel delivery characteristics		Starting fuel delivery Idle ⑤		④a Idle stop	
rev/min	cm³/1000 strokes	Note: changed to ...) rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
880	145,0 - 147,0 (143,0 - 149,0)	940-950*			100	220 -250 = 20,0 - 21,0 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

En

G13

G13

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 47,5 a
3. Edition
En

PE 12 ZWM 160/120 RS 2002 RQUV 300-1050 ZWA 65 R

1- 2- 9- 4 - 5 - 8 - 11- 2 - 3 - 10- 7 - 6
0-45-60-105-120-165-180-225-240-285-300-345 ° ±0,5°(±0,75°)

Replaces
Firm: 3.82
MTU
Engine: 12 V 396-03
1440 kW

All test specifications apply only to Bosch fuel-injection pump test benches and equipment. Komb.-Nr. 0 406 030 002

Testoil-ISO 4113

A. Fuel-injection-pump settings Cylinder 12 - control rod in center position

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC)

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0-0,1	622,0-636,0	20,0 (30,0)	619,0-639,0	
1000	9,0-9,1	220,0-248,0	28,0 (42,0)	215,0-253,0	
300	9,0-9,1	104,0-128,0	16,0 (24,0)	99,0-133,0	

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	min⁻¹ 2	Control-rod travel mm 3	Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	min⁻¹ 10	Control-rod travel mm 11
ca. 82	1050	18,0	ca. 27	375	8,0	ca. 21	300	8,0	-	-
	17,0	1055-1075		200	14,3-17,2		200	10,8-14,2		
	4,0	1150-1210		300	10,3-11,8		400	3,9-5,0		
	1250	0 - 2,0		500	1,9-3,7		485-590	= 0		
				590-720	= 0					

Torque control travel dimension a = mm

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min⁻¹ 1	cm³/1000 strokes 2	min⁻¹ 3	min⁻¹ 4	cm³/1000 strokes 5	min⁻¹ 6	cm³/1000 strokes 7
Not known. Carry out adjustment on engine.						

Checking values in brackets

4.83

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
by Robert Bosch GmbH D-7 Stuttgart 1 Postfach 50 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

G14

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 23,7 a

1. Edition

En

PE 6 ZWM 160/120 BS 2004 RQUV 300-1050 ZWA 65 R

Komb.-Nr. 0 406 036 034

1- 2- 3 - 4 - 5 - 6

0-45-120-165-240-325 ° ± 0,50 (± 0,75 °)

Replaces

Firm: -

Engine: MTU 396-03 720 kW

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Testoil-ISO 4113

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC)

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0+0,1	622,0-636,0	20,0 (30,0)	619,0-639,0	
1000	9,0-9,1	220,0-248,0	28,0 (42,0)	215,0-253,0	
300	9,0-9,1	104,0-128,0	16,0 (24,0)	99,0-133,0	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	min⁻¹ 2	Control-rod travel mm 3	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca. 82	1050	18,0	ca. 27	375	8,0	ca. 21	300	8,0	-	-
	17,0	1055-1075		200	14,3-17,2		200	10,8-14,2		
	4,0	1150-1210		300	10,3-11,8		400	3,9-5,0		
	1250	0 - 2,0		500	1,9-3,7		485-590	0		
				590-720	0					

Torque control travel dimension a = mm

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°) min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed min⁻¹ 3	Fuel-delivery characteristics min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery min⁻¹ 6	cm³/1000 strokes 7
Not known. Carry out adjustment on engine.						

Checking values in brackets

4.83

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
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Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 HAN 10,8 a 1

7. Edition

En

Testoil-ISO 4113

PE 6 A 95 D 320 RS 2364 EP/RSV 350-1100 A8 B1070R
RS 2557 A8 B1127R

supersedes 8.82
company MF-Hanomag
engine D 963 A1

** Test cold-start device according to VDT-I-DAF 002, page 2!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery 2364 cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery 2557 cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,5	13,5 - 13,8	0,3 (0,6)	13,2	12,4 - 12,5	n 1100
	+0,1			+0,1		
350	6,7-6,9	1,4 - 2,0	0,3 (0,5)	6,6-6,8	1,4 - 2,0	n 350
500	- - - -	C, 4-5	0,4 (0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca.24	350	5,5	480	13,5-13,6
	x =	5,5					100	min. 19		
							350	5,9-6,1	400	13,8-14,2
ca.57	12,5	1140-1150					435-495	2,0		
(2a)	4,0	1205-1235					600	0 - 1		
	1380	0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1100	134,0 - 136,0 (132,0 - 138,0	1140-1150*	500	131,0 - 134,0 (129,0 - 136,0)	100	20-20,5 mm RW **		

Checking values in brackets

* 1 mm less control rod travel than col 2

4.83

G16

G16

The numbers denote the sequence of the tests

2557 + 1127 R

B. Governor Settings

(1) Degree of deflection of control lever	Upper rated speed rev/min: Control rod travel mm	Control rod travel mm rev/min	Intermediate rated speed			(4) Control-lever deflection in degrees	Lower rated speed: rev/min	Control rod travel mm	(3) Torque control: rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800 0,3-1,0 x = 5,5					ca.19	350	62	1100	13,2-13,3
ca.50	12,2 = 1140-1150 4,0 = 1220-1250 1370 = 0,3-1,7						100 350 470-530	min. 19,5 6,6-6,8 = 2,0	450 400	13,2-13,4 13,5-13,9
(2a)										

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min	cm³/1000 strokes	(6) Rotational-speed limitat. Note: changed to ...) rev/min	(3a) Fuel delivery characteristics: rev/min	cm³/1000 strokes	Starting fuel delivery Idle (5): rev/min	cm³/1000 strokes	(4a) Idle stop: rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1100	124,0 - 125,0 (122,0 - 127,0)	1140-1150*	500	121,0 - 124,0 (119,0 - 126,0)	100	20-20,5 mm RW**		

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

(1) Degree of deflection of control lever	Upper rated speed rev/min: Control rod travel mm	Control rod travel mm rev/min	Intermediate rated speed			(4) Control-lever deflection in degrees	Lower rated speed: rev/min	Control rod travel mm	(3) Torque control: rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
(2a)										

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min	cm³/1000 strokes	(6) Rotational-speed limitat. Note: changed to ...) rev/min	(3a) Fuel delivery characteristics: rev/min	cm³/1000 strokes	Starting fuel delivery Idle (5): rev/min	cm³/1000 strokes	(4a) Idle stop: rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col. 2

En

G17

G17

Test Specifications Fuel Injection Pumps and Governors ②

WPP 001/4 MB 11,8 e
6. Edition
En

Testoil-ISO 4113

PE 6 P 100 A 720 RS 15 RQ 250/1100 PA 269 R
PA 278 R *

supersedes 10.82
company: Daimler-Benz
engine: OM 355

1 - 5 - 3 - 6 - 2 - 4 je 60°

Komb.-Nr. 0 401 846 329

* 278 R - Functional check of roll-start block: Adjust solenoid until control rod is 1,5...2,5 mm from stop.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,75-2,75) 2,80-2,90 mm (from BDC) RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,0+0,1	11,8 - 12,0	0,3(0,6)			
250	7,4-7,6	1,70 - 2,30	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	12,0	1125-1145	250	6,0	100	min.7,5		
				4,0	1195-1230			250	5,9-6,1		
1350	0 - 1							385-425	=2,0		

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 1125-1145 min^{-1} 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1100	118,5-120,5 (116,5-122,5)	450	450	101,0 - 105,0 (99,0 - 107,0)	100	140-160

Checking values in brackets

3.83

G19

Testoil-ISO 4113

PE 6 A 85 D 320 RS 2546 RSV 250-750 A 7 B 2125 R
Komb.-Nr. 0 400 676 168

supersedes 9.82
company DAF
engine: DD 575 DF

Specifications apply to test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers.

Port closing difference between control-rod travel 9 and max. = 3,0-4,0°.

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,1 - 2,3) mm (from BDC) RW = 9 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,1+0,1	6,0 - 6,2	0,3(0,45)			
250	8,4-8,6	0,8 - 1,4	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3 - 1,0	-	-	-	ca. 16	250	8,5	750	12,1+0,1
	x =	4,5							700	12,1+0,3
(5) ca.40	11,1 4,0 955	770-780 795-815 0,3-1,7					250 260-320=2,0mm	**		

** Set idle-speed auxiliary spring at 2,0 mm control-rod travel, then 1/2 turn back.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop: Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
750	60,5 - 62,5 (58,5 - 64,5)	770-780*	-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

4.83

BOSCH

Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
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Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

Test Specifications Fuel Injection Pumps and Governors (1)

WPP 001/4 VOL 7,0 a 1
1. Edition

En

PE 6 P 100/320 RS 169 Z (A)
RQV 200-1200 PA 122/2 R
RQV 250-1200 PA 235/2 R

supersedes
company Volvo
engine: TD 70

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	10,4-11,1	0,5			2,5 ± 0,1 (max.2,2-2,9)
600	9,0	3,3-4,3				
600	12,0	9,8-11,2				
600	15,0	14,9-16,5				
200	9,0	2,3-3,3				

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings ..PA 122/2 R

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca. 68	1290	15,0-18,0	-	-	-	ca.23	200	8,6-10,0	1290	8,3
	1550	0					300	6,4-8,8		
ca. 66	1200	15,0-17,8					400	2,9-5,4		
	1300	7,7-12,6					500	0,7-2,7		
	1400	0 - 7,6					590	0		
	1500	0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1230-1240*	LDA	0 bar	100	150,0-180,0	-	-
700	70,0-72,0 (69,0-73,0)		700	59,5-62,5 (58,5-63,5)	200	11,0-15,0		
					Dispersion max. 2,5			

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.83

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Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung
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B. Governor Settings ..PA 235/2 R

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	(1a) (2a)	Degree of deflection of control lever	rev/min	Control rod travel mm	(4)	Degree of deflection of control lever	rev/min	Control rod travel mm	(3)	(1) rev/min	mm
1	2	3		4	5	6		7	8	9		10	11
ca. 50	1290	15,0-18,4		-	-	-		ca. 13	100	8,9-11,0		1290	8,3
	1560	0							200	7,0-10,0			
ca. 45	1200	15,0-18,2							300	3,8-6,8			
	1300	8,1-13,2							380	0 - 4,0			
	1400	0 - 7,4							510	0			
	1510	0						(3a)					

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA	0,7 bar	1230-1240*	LDA	0 bar	100	150,0-180,0	-	
700	70,0-72,0		700	59,5-62,5				
	(69,0-73,0)			(58,5-63,5)	200	11,0-15,0		
					Dispersion max. 2,5			

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm
PE 6 P..RS 169 Z + RQV..PA 122/2 R	0,11-0,14		
bzw.		0,05-0,11	
+ RQV..PA 235/2 R			

En

G21

Test Specifications Fuel Injection Pumps and Governors

(1) NPP 001/4 VOL 7,0 a 3
1. Edition
En

PE 6 P 100/320 RS 169 Y (A)
RQV 200-1200 PA 122/2 R
RQV 250-1200 PA 235/2 R

supersedes
company Volvo
engine: TD 70

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	10,4-11,1	0,5			2,5 ± 0,1 (max. 2,2-2,9)
600	9,0	3,3-4,3				
600	12,0	9,8-11,2				
600	15,0	14,9-16,5				
200	9,0	2,3-3,3				

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings .. PA 122/2 R

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca. 68	1290	15,0-18,0	-	-	-	ca. 23	200	8,6-10,0	1290	8,3
	1550	0					300	6,4-8,8		
ca. 66	1200	15,0-17,8					400	2,9-5,4		
	1300	7,7-12,6					500	0,7-2,7		
	1400	0 - 7,6					590	0		
	1500	0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1230-1240*	LDA	0 bar	100	150,0-180,0	-	-
700	100,0-102,0 (99,0-103,0)		700	67,5-70,5 (66,5-71,5)	200	11,0-15,0		
					Dispersion max. 2,5			

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.83

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BOSCH Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung

G22

B. Governor Settings .. PA 235/2 R

Upper rated speed: Degree of deflection of control lever (1)	Upper rated speed: rev/min Control rod travel mm (2)	Upper rated speed: Control rod travel mm rev/min (1a, 2a)	Intermediate rated speed: Degree of deflection of control lever (4)	Intermediate rated speed: rev/min	Intermediate rated speed: Control rod travel mm	Lower rated speed: Degree of deflection of control lever (3a)	Lower rated speed: rev/min	Lower rated speed: Control rod travel mm (3)	Sliding sleeve travel (1): rev/min	Sliding sleeve travel (1): mm
ca. 50	1290	15,0-18,4	-	-	-	ca.13	100	8,9-11,0	1290	8,3
	1560	0					200	7,0-10,0		
ca. 45	1200	15,0-18,2					300	3,8-6,8		
	1300	8,1-13,2					380	0 - 4,0		
	1400	0 - 7,4					510	0		
	1510	0								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min	Full-load delivery: cm³/1000 strokes	Rotational-speed limitation (2b) intermediate speed (4a): rev/min	Fuel delivery characteristics (5a) high/idle speed (5b): rev/min	Fuel delivery characteristics: cm³/1000 strokes	Starting fuel delivery (6) idle switching point: rev/min	Starting fuel delivery: cm³/1000 strokes	Torque-control travel (5): rev/min	Torque-control travel: Control rod travel mm
LDA	0,7 bar	1230-1240 *	LDA	0 bar	100	150,0-180,0	-	
700	100,0-102,0 (99,0-103,0)		700	67,5-70,5 (66,5-71,5)	200	11,0-15,0		
						Disperstion max. 2,5		

Checking values in brackets

* 1 mm less control rod travel than co: 2

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting: Gauge pressure = bar	Measurement: Gauge pressure = bar	Control rod travel- diminution / difference mm
PE 6 P .. RS 169 Y + RQV.. PA 122/2 R	0,37-0,40		
bzw.		0,12-0,18	
RQV..PA 235/2 R			

En

EB

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 11,0 q
2. Edition
En

PE 6 P 120 A 320 LS 3815 RSV 650-1150 P1/820R

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

supersedes 10.82
company: Daimler-Benz
engine: OM 421 A
206 kW (280 PS)

Kmb.-Nr. 0 401 876 722

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 (3,95-4,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	12,0+0,1	18,4 - 18,6	0,5(0,9)			
650	3,5-3,7	1,8 - 2,4	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.30	650	4,2	-	-
	X =	3,0					650	4,1-4,3		
(5) ca.54	11,0	1160-1170					655-715 = 2,0 **			
	4,0	1185-1215								
	1300	0,3-1,7								

** Set auxiliary idle spring at 2.0 mm control-rod travel.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop: Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
1130	184,0-186,0 (181,0-189,0)	1160-1170*	-	-	100	190,0-210,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

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Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 FIA 13,8 a 6
1. Edition

En

PE 6 P 120 A 720 RS 167 RQ 225/1100 PA 323 R

supersedes –
company: Fiat
engine: 221 A
Komb.-Nr. 0 401 846 356

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 - 2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,1+0,1	17,0-17,3	0,5(0,8)			
225	7,5-7,7	1,7-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	15,6-16,4	550	16,0	10,1 4,0 1350	1145-1160 1190-1220 0-1,0	225	7,6	100 225 365-405	min.9,1 7,5-7,7 = 2,0	1100 550	11,1-11,2 11,1-11,3

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 1145-1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1100	170,0-173,0 (167,0-176,0)	–	–	–	100	19,5-21,0 mm RW

Checking values in brackets

3.83

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H1

1

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 13,8 a 1
4. Edition
En

PE 6 P 120 A 720 RS 167 RQV 225-1100 PA 177 R

supersedes

company Fiat

engine:

Komb.-Nr. 0 401 846 245

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 - 2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,1+0,1	17,0-17,3	0,5 (0,9)			
225	7,5-7,6	1,7-2,3	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ⑬ ⑫ 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca.10	100	min.7,5	200	0,6-0,9
ca.60	10,1	1140-1150					225	5,9-6,1	500	2,7-3,0
	4,0	1200-1230					295-410	= 2,0	800	4,7-4,9
	1350	0-1,0							1100	7,9
						⑬				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed ⑫ ④ rev/min 3	Fuel delivery characteristics ⑤ high idle speed ⑤ rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
1100	170,0-173,0 (167,0-175,0)	1140-1150*	-	-	100	19,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

BOSCH Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung.

H2

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 DEE 7,6 b

1. Edition

En

PES 6 A 100 D 410 RS 3034 RSV 600-1100 A 2 B 2080 L

Komb.-Nr. 0 401 276 049

supersedes -

company John Deere

engine 6.466 AZ-01
152 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,95-2,05 (1,90-2,10) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,2+0,1	13,5-13,7	0,3			
600	4,8-5,0	1,3-1,7	0,3			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 19	600	4,4	-	-
							100	min. 19,0		
							600	4,8-5,0		
							620-680	= 2,0		
ca. 37 (2a)	11,2	1145-1155					800	max. 1,0		
	4,0	1195-1225								
	1250	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 134,5-136,5 (133,0-138,0)	1145-1155*	LDA 500	0 bar 68,5-71,5 (67,0-73,0)	100	170,0-195,0 = 19,0-21,0 mm RW	600	4,9

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

H3

H3

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PES 6 A ..RS 3034 +RSV..A 2 B 2080L	0,29	0,13	2,65-2,75 0,7-1,1

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

VDT-WPP 001/4 MAC 11,0 s
1. Edition
En

PES 6 P 110 A 720/3 RS 356 RQ 300/900 PA 396 R
Komb.-Nr. 0 402 036 036 PLE-Maß = 0,740" - 0,820"
Note VDT-I-MAC 002!
Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

supersedes -
company MACK
engine ET 673 A

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	12,3+0,1	16,7 - 16,9	0,4			
300	6,0 6,2	0,7 - 1,7	0,4			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
950	10,8-14,1	950	12,5	1000	0,4-7,8	300	5,5	100	9,8-11,2	-	-
				1050	0 - 1,0			300	5,4-5,7		
								400	1,4-2,0		
				1070	0			900	1,4-2,0		
								950	0 - 1,4		
								980	0		

Torque-control travel on flyweight assembly dimension a = mm Speed regulation At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes mm 7
900	167,0-169,0	-	600	163,5 - 166,5	100	110,0-170,0
				PLE	High idle speed	
			300	108,0 - 116,0	995	34,0 - 37,0

Checking values in brackets

3.83

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H5

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 x 7

1. Edition

En

US-PES 6 P 110 A 720 RS 6006 US-RQV 300/600-1050 PA 593-1K supersedes -
Komb.-Nr. 9 400 231 153 PLE-Maß = 0,740" - 0,820" company MACK
Note VDT-I-MAC 002! engine EM 6 - 225
Values only apply to test nozzle-and-holder assembly 0 681 343 009 225 PS
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	10,5+0,1	16,1 - 16,3	0,4			
300	5,2-5,4	2,1 - 3,1	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1120	15,2-17,8	-	-	-	ca.20 (3a)	250	9,8-11,3	-	-
ca. 59	9,5 4,0 1225	1090-1100 1165-1195 0 - 1,0					300 400 695-755	7,9-8,1 3,8-5,2 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1050	161,0-163,0	1090-1100 *	850	162,5-165,5	100	120,0-180,0	1050	10,5
							950	10,5+0,1
			630	180,0-183,0			850	10,6+0,1
							750	10,9+0,1
				PLE			630	11,3+0,1
			800	150,0-158,0			500	10,9+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.83

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 x 2
1. Edition
En

US-PES 6 P 110 A 720 RS 6006 US-RQV 300/600-1050 PA 587-2K supersedes -
Komb.-Nr. 9 400 231 141 PLE-Maß = 0,740" - 0,820" company MACK
Note VDT-I-MAC 002! engine EM 6 - 237
Values only apply to test nozzle-and-holder assembly 0 681 343 009 224 PS
and fuel-injection test tubing 1 680 750 015

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,3+0,1	17,6 - 17,8	0,4			
300	5,2-5,4	1.1 - 2,1	0,4			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1125	15,2-17,8	-	-	-	ca.21	250	9,5-11,0	-	-
ca.61	11,3 4,0 1230	1090-1100 1170-1200 0 - 1,0				(3a)	300 400 700-760=	7,9-8,1 3,8-5,2 2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1000	175,5-177,5	1090-1100 *	800	180,5-183,5	100	110,0-170,0	1050	12,3+0,1
							1000	12,3
			600	199,0-202,0			800	12,7+0,1
				PLE			700	13,0+0,1
			800	103,0-111,0			600	13,5+0,1
							500	13,1+0,1

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 j
1. Edition
En

US-PES 6 P 110 A 720 RS 6009-1 US-RQV 300/600-1050 PA 543-1K supersedes -
Komb.-Nr. 9 400 231 143 PLE-Maß = 0,740" - 0,820" company: MACK
Note VDT-I-MAC 002! engine: E 6 - 250
Values only apply to test nozzle-and-holder assembly 0 681 343 009 250 PS
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,4+0,1	16,9 - 17,1	0,4			
300	6,4-6,6	1,1 - 2,1	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	1125	15,2-17,8	-	-	-	ca. 20,5 ③a	250	9,5-11,0	-	-
ca. 61	11,4 4,0 1235	1090-1100 1180-1210 0 - 1,0					300 400 700-760	7,9-8,1 3,9-5,3 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control ⑤ travel rev/min 8	Control rod travel mm 9
1000	169,0-171,0	1090-1100 *	750	169,5-172,5	100	110,0-170,0	1050	12,4+0,1
							1000	12,4
			650	155,5-158,5			900	12,3+0,1
				PLE			750	12,3+0,1
			800	103,0-111,0			650	11,8+0,1
							500	11,2+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

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3.83

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MAC 11,0 v 1
1. Edition

En

US-PES 6 P 110 A 720 RS 6006 US-RQV 300/400-850 PA 623-K
Komb.-Nr. 9 400 231 139 PLE-Maß = 0,740" - 0,820"
Note VDT-I-MAC 002!
Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

supersedes -
company MACK
engine EM 6 250 R
250 PS

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	11,7+0,1	18,5 - 18,7	0,4			
300	4,5-4,7	1,2 - 2,2	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever (3a) 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	925	15,2-17,8	-	-	-	ca.21,5	250	8,0-9,4	-	-
ca. 59	10,7 4,0 1080	890-900 990-1020 0 - 1,0					300 400 510-570	7,9-8,0 3,8-5,2 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a) rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
850	185,0-187,0	890-900 *	700	195,5-198,5	100	110,0-170,0	850	11,7
							800	11,8+0,1
			630	205,5-208,5			700	12,2+0,1
				PLE			630	12,5+0,1
			800	147,0-155,0			500	11,9+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAC 10,9 b
1. Edition
En

PES 6 P 110 A 720/3 RS 6001 RQV 300/450-950 PA 408 KR supersedes -
Komb.-Nr. 0 402 736 631 PLE-Maß = 0,740" - 0,820" company: MACK
Note VDT-I-MAC 002! engine: ETAZ 673 A DOM
Values only apply to test nozzle-and-holder assembly 0 681 343 009 315 PS/1900 min^{-1}
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,4-2,5 (2,35-2,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	15,1+0,1	23,3 - 23,5	0,4			
300	5,0-5,2	1,5 - 2,5	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min ①a ②a 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm ④ 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm ③ 9	Sliding sleeve travel ① rev/min 10	mm 11
max.	970	16,2-17,8	-	-	-	ca.18,5	250	9,8-11,3	250	0,2-1,2
ca.63	14,1	990-1000					300	7,9-8,1	450	3,7-4,1
	4,0	1115-1145					400	3,8-5,2	700	5,4-5,8
	1200	0 - 1,0					575-635	=2,0	950	8,2
						③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ② rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation ②b intermediate speed ④a rev/min 3	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery ⑥ idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel ⑤ rev/min 8	Control rod travel mm 9
900	233,0-235,0	990-1000*	725	233,5-236,5	100	120,0-180,0	950	15,0
			600	215,5-218,5			900	15,1
							725	15,2+0,1
							700	15,0+0,1
				PLE			600	max. 14,5
			300	101,0-109,0			500	13,9+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps and Governors

① VDT-WPP 001/4 MAC 11,0 i 8

1. Edition

En

PES 6 P 110 A 720/3 RS 3036 US-RQV 300/450-950 PA 531K
Komb.-Nr. 9 400 231 053 PLE-Maß = 0,740" - 0,820"
Note VDT-I-MAC 002!
Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

supersedes -
company: Mack
engine. ETSZ 673 A
315 PS

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,4 - 2,5 (2,35-2,55) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	14,7+0,1	22,7-22,9	0,4			
300	4,8-5,0	1,2- 2,2	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1020	15,2-17,8	-	-	-	ca.20	250	9,5-11,0	-	-
ca.52	13,7 4,0 1200	990-1000 1110-1140 0- 1,0				(3a)	300 400 570-630	7,9- 8,1 3,5- 4,9 = 2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
900	227,0-229,0	990-1000*	725	231,0-234,0	100	110,0-170,0	950	14,6+0,1
							900	14,7
			650	218,0-221,0			800	14,9+0,1
				PLE			725	14,9+0,1
							650	14,3+0,1
			300	105,5-113,5			500	13,3+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Test Specifications Fuel Injection Pumps and Governors ①

VDT-WPP 001/4 MAC 11,0 y
1. Edition
En

US-PES 6 P 110 A 720/3 RS 6003 US-RQV 300/400-850 PA 623K supersedes -
Komb.-Nr. 9 400 231 105 PLE-Maß = 0,740"-0,820" company: Mack
Note VDT-I-MAC 002! engine: EM 6 250 R
Values only apply to test nozzle-and-holder assembly 0 681 343 009 250 PS
and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2 - 3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	11,7+0,1	18,5-18,7	0,4			
300	4,5-4,7	1,2 - 2,2	0,4			

Testoil-ISO 4113

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	925	15,2-17,8				ca.21,5	250	8,0-9,4		
ca.59	10,7 4,0 1080	890 - 900 990 -1020 0 - 1,0				(3a)	300 400 510-570	7,9-8,0 3,8-5,2 =2,0		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
850	185,0-187,0	890-900*	700	193,0-196,0	100	110,0-170,0	850	11,7
			630	200,5-203,5 PLE			800	11,8+0,1
			500	148,0-156,0			700	12,2+0,1
							630	12,5+0,1
							500	11,9+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

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BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

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Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MAC 11,0 n
1. Edition
En

PES 6 P 110 A 720 RS 3024 RQV 300/600-1050 PA 326 KR (1)
... A 720 RS 3024 RQV 300/450- 950 PA 332 KR (2)
326KR = Maß PLE - 490- 547 inch.
332KR = Maß PLE - 490-.570 inch.
Note VDT-I-MAC 002!
Values only apply to test nozzle-and-holder assembly 0 681 343 009
and fuel-injection test tubing 1 680 750 015

supersedes -
company: MACK
engine. ETA 676 (285 HP-1)
ETAZ673A(315 HP-2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	15,1+0,1	23,1 - 23,3	0,4			
300	5,0	1,3 - 2,1				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

-326 KR (1)

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever (3a) 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.68	1070	15,5-18,0	-	-	-	ca.19	250	9,8-11,3	300	0,6-1,8
	1150	6,0-11,0					350	4,6- 6,2	400-	600 =
	1200	0 - 6,8					500	2,5- 5,0		3,1-3,6
	1280	0					700	0,3- 2,0	900	5,8-6,2
							830	0	1070	8,2

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1050	206,0-208,0	1090-1100*	600	224,0-230,0	275	140,0-170,0	1050	14,0
					300	14,0- 24,0	800	14,3
			PLE					
			300	129 -139			600	15,0
							500	14,5

Checking values in brackets

* 1 mm less control rod travel than col. 2

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B. Governor Settings

332 KR (2)

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (2a)	(1a)	Degree of deflection of control lever	rev/min	Control rod travel mm (4)		Degree of deflection of control lever	rev/min	Control rod travel mm (3)		(1) rev/min	mm
1	2	3		4	5	6		7	8	9		10	11
ca.68	970	15,5-18,0		-	-	-		ca.19	250	9,8-11,3		300	1,4-2,4
	1050	7,0-11,6							350	3,2-4,8		450	3,5-4,3
	1100	1,7-7,8							500	2,6-4,0		800	6,0-6,5
	1200	0						(3a)	760	0		990	8,3

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		(2b) Rotational-speed limitation intermediate speed (4a)	(5a) Fuel delivery characteristics high idle speed (5b)		(6) Starting fuel delivery idle switching point		(5) Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
900	230,5-232,5	990-1000*	725	231,5-234,5	100	140,0-170,0	950	14,9
			600	212,5-215,5	300	14,0-24,0	725	15,1
			PLE				500	13,6
			300	102,0-110,0				

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

B. Governor Settings

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (2a)	(1a)	Degree of deflection of control lever	rev/min	Control rod travel mm (4)		Degree of deflection of control lever	rev/min	Control rod travel mm (3)		(1) rev/min	mm
1	2	3		4	5	6		7	8	9		10	11
								(3a)					

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		(2b) Rotational-speed limitation intermediate speed (4a)	(5a) Fuel delivery characteristics high idle speed (5b)		(6) Starting fuel delivery idle switching point		(5) Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min		rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col 2

Test specifications
Fuel injection pumps and governors

WPP 001/4 MTU 59,2 a
1. Edition
En

PE 6 ZW 140/400 RS 27/2, 53/2
PE 6 ZW 140/410/3 RS 28/2, 54/2 RQUV 300-750 ZW 31

Replaces –
Firm: MTU
Engine: MMB 820

Please note instructions on sheet 2

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testoil-ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,0-2,1 mm (from BDC) Zyl. 6

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0+0,1	491,0-501,0	16,0		
600	4,0-4,2	70,0-90,0	12,0		
250	4,0-4,2	23,0-43,0	12,0		

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	min⁻¹ 2	Control-rod travel mm 3	Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	min⁻¹ 10	Control-rod travel mm 11
ca. 85	750	21,5-23,5	–	–	–	ca.19	270	11,0-13,0	–	–
	775	13,0-18,0					300	7,6-8,0		
	800	5,0-12,0					325	5,0-6,2		
	840	0-3,0					350	4,8		
	865	0					400	3,3-4,3		
							540	0		

Torque control travel dimension a = mm

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min⁻¹ 1	cm³/1000 strokes 2	min⁻¹ 3	min⁻¹ 4	cm³/1000 strokes 5	min⁻¹ 6	cm³/1000 strokes 7
750	21 mm RW	–	–	–	–	–

Checking values in brackets

2.83

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H15

Pump

With these pumps the customer also requests that the stop and full load limits of the control-rod projection be stamped on the pump housing at contol-rod travel 0 mm.
These dimensions, which must be stamped in, can be calculated as follows:

Mark control-rod travel 18 mm (setting point of the pump) with insertion device. Calculate the projection of the control rod front end on pump side 2. Deduct 18 mm from the dimension calculated. Calculate the projection of the control rod with forked piece fitted on pump side 1. Add 18 mm to this dimension. Stamp these dimensions on the front of the pump housing above the spring chamber cover (with plunger-and-barrel assembly 1 the dimension of pump side 1 and with plunger-and-barrel assembly 6 that of pump side 2). Size of figures approx. 5 - 6 mm.

After the insertion device has been removed the 0-dimension calculated on pump side 2 must be reached or not reached in the stop position of the control rod.

On pumps with governor ascertain only the dimension on the drive end and stamp this on the housing.

Governor

The lower idle spring must be positioned between its spring seats, and if necessary also the middle spring must be positioned under the outer spring seat, so that the governor specifications are reached.

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 26,5 a

1. Edition

En

PE8ZWM 160/120 RS 1032/11 ROUV300-120U ZWA 51 R

1-2-6-3-4-5-7-8 je 45° ± 0,5° (±0,75°)

Replaces –

Firm: MTU

Engine: 8 V 331 Hydrfoil

Komb. -Nr. 0 406 038 022

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testoil-ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,5-2,6 mm (from BDC) Zyl. 8

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0+0,1	513,0-523,0	16,0(24,0)	510,0-526,0	
600	9,0+0,1	140,0-160,0	12,0(18,0)	135,0-165,0	
300	9,0+0,1	72,0-92,0	11,0 (16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	min⁻¹ 2	Control-rod travel mm 3	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever de-flection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca.84	1200	18,0-18,1	ca.27	200	14,3-17,2	ca.21	200	10,8-14,2	–	–
				300	10,3-11,8		300	8,0		
ca.84	17,0	1205-1225		375	8,0		400	3,9-5,0		
	4,0	1320-1380		500	2,5-3,7		485-	590=0		
	1400	0 - 2,0		590-720=0						

Torque control travel dimension a = mm

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min⁻¹ 1	cm³/1000 strokes 2	min⁻¹ 3	min⁻¹ 4	cm³/1000 strokes 5	min⁻¹ 6	cm³/1000 strokes 7
		300 = RW 8,0 mm	–	–	–	–

Checking values in brackets

Adjustment at the idle stop

2.83

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Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 39,7a

1. Edition

En

PEV 12ZWM 160/120 RS 1030/11 RQU 425-600/1300 ZWA 62-1

Replaces –
Firm: MTU
Engine: MB 873

0 406 030 999

1-4- 10-7 - 5 - 2 - 12- 9 - 3 - 6 - 8 - 11
0-15-60-75-120-135-180-195-240-255-300-315° ±0.5° (±0,75°
Specifications apply to test tubing 1 680 750 069

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testoil-ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,5-2,6 mm (from BDC) Zyl. 12

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
1300	12,0+0,1	375,0-385,0	16,0(24,0)	372,0-388,0	
1300	6,0-6,2	113,0-127,0	18,0(27,0)	110,0-130,0	
425	6,0-6,2	31,0-51,0	16,0(24,0)	27,0- 55,0	

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	min⁻¹ 2	Control-rod travel mm 3	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	mm min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
50 ±0,5	800	12,0-12,5	ca.31	600	6,4-6,6	ca.18	300	10,8-14,0	-	-
	1300	13,5		800	0,5-2,0		450	6,4-6,6		
	12,5	1325-1340		1300	0,5-2,0		500	3,2-5,3		
	4,0	1445-1485					0	550-640		
	0	1495-1603								

Torque control travel dimension a = mm

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°): min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed min⁻¹ 3	Fuel-delivery characteristics Leerlauf: min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery: min⁻¹ 6	cm³/1000 strokes 7
1300	381,0-385,0 (378,0-388,0) *	-	425	72,0-76,0	-	-
				12,0 Dispersion		

Checking values in brackets

* Adjusted with KDEP 1533

2.83

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1/19

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 29,9 d
1. Edition
En

Replaces –

PE 8 ZWM 140/120 RS 1018/11 RQU 350-500/1050 ZWA 59 DR
Governor adjustement according to VDT-I-420/112

Firm: MTU
Engine: MB 837 Ea
537 kW (730 PS)

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je 45 ± 0,5 (± 0,75)

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testoil-ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,0 - 2,1 mm (from BDC)

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	373,0-378,0	11,0(16,0)	369,0-382,0	
600	9,0	143,0-163,0	14,0(21,0)	148,0-168,0	
200	9,0	71,0- 91,0	14,0(21,0)	66,0- 96,0	
1050	-	C, Sp. 2	10,0(15,0)		
300	-	C, Sp. 7	9,0		

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	min⁻¹ 2	Control-rod travel mm 3	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca. 62	700	18,0	ca. 43	400	12,0-17,0	ca.27,5	100	15,3-18,0	-	-
	1070	17,6-18,0		500	6,6- 9,1		200	12,0-15,7		
	1150	9,6-14,0		570	0 - 4,8		300	7,1- 8,3		
	1230	0,4- 7,0		660	0		400	1,5- 5,2		
	1300	0					520	0		

Torque control travel dimension a = 0 mm
Speed regulation: 1 mm less control-rod travel at 1075-1085 min⁻¹.

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°) min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed min⁻¹ 3	Fuel delivery characteristic Leerlauf min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery min⁻¹ 6	cm³/1000 strokes 7
1050	373,0-378,0 (369,0-382,0)		300	80,0-90,0	100	18,0-18,2 mm RW
					Shutoff solenoid 0,5 - 1,0 mm in front of stop	

Checking values in brackets

2.83

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H19

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 37,4 b

8. Edition

En

PE 10 ZWM 140/120 RS 38/11 RQU 425/1100 ZW 30 DR
Governor adjustement according to VDT-I-420/112

Replaces
Firm: 10.68
Engine: MTU MB 833

1-2 - 9- 10- 3 - 4 - 5 - 6 - 7 - 8
0-45-72-117-144-189-216-261-288-333 ° ± 0,5 ° (± 0,75 °)

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testoil-ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,0-2,1 mm (from BDC) Zyl. 10

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	373,0-378,0	11,0 (16,0)	370,0-381,0	
600	9,0	143,0-163,0	14,0 (21,0)	138,0-166,0	
200	9,0	71,0-91,0	14,0 (21,0)	66,0-96,0	
1080	-	C, Sp. 2	9,0 (14,0)		
900/550	-	C, Sp. 5	11,0 (16,0)		

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	min⁻¹ 2	Control-rod travel mm 3	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever de-flection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
max.	600	18,0-18,5	-	-	-	ca.27	600	1,3-1,7	700	17,6-18,0
ca. 58	1100	16,5-16,7					150	16,5-18,0	900	16,8-17,2
	1150	12,0-14,6					425	5,3-5,8	1050	16,5-16,7
	1200	7,0-10,8					800	0,6-1,2		
	1250	2,0-6,4					1100	0,2-1,1		
	1350	0-1,0					1140	0		

Torque control travel dimension a = 0,35 mm

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°): min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed: min⁻¹ 3	Fuel-delivery characteristics: min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery: min⁻¹ 6	cm³/1000 strokes 7
1080	316,0-320,0 (313,0-323,0)		900	305,0-313,0 (301,0-317,0)	100	18,0-18,2 mm RW
			550	271,0-279,0 (267,0-283,0)	425	5,1-5,7 Dispersion 0,8
	Limit stop screw to 0,5 - 1,0 mm				1220	8,5-10,5 Dispersion 2,1

Checking values in brackets

Shutoff solenoid 0,5 - 1,0 mm in front of stop

2.83

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Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 5,7o
7. Edition
En

Testoil-ISO 4113

PES 6 A 90 D 410 RS 2293 Z RSV 575-1250 A 1 B 618 L

Komb.-Nr. 0 400 876 195

superseded 0.82
company: Daimler-Benz
engine: OM 352 A
107 kW (145 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,10-2,30) 2,15-2,25 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1230	11,2+0,1	7,5 - 7,6	0,3(0,45)			
575	7,4-7,6	2,1 - 2,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.34	575	7,5	-	-
	x	= 5,0					610	1,9-2,1		
ca. 66 (5)	1260-1270	= 10,2					580-640	=2,0		
	1400	= 0,3-1,7								

Speed difference between 1.0 mm regulated and control-rod travel 4.0 mm at n=35-45min/1

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
1230	74,5 - 75,5 (72,5 - 77,5)	1260-1270*	-	-	100	71,0-81,0 / 13,8-14,2 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.83

H21

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 DAF 8,3 n
4. Edition
En

Testoil-ISO 4113

PE 6 A 95 D 410 RS 2575 RSV 250-750 A7B2124L
Komb.-Nr. 0 400 676 166

Specifications apply to test tubing 1 680 750 015

supersedes: 10.82
company: DAF
engine: DU 825
Generator

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 - 2,1 (1,95-2,15) mm (from BDC) RW 9,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,5+0,1	9,9 - 10,1	0,4(0,7)			
250	6,0-6,2	0,7 - 1,3	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Port closing difference between control-rod travel 3 and max. = 3,0-4,0°.

Upper rated speed: Degree of deflection of control lever 1	Upper rated speed: rev/min 2	Upper rated speed: Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	Intermediate rated speed: rev/min 5	Intermediate rated speed: Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	(4) Lower rated speed: rev/min 8	(4) Lower rated speed: Control rod travel mm 9	(3) Torque control: rev/min 10	(3) Torque control: Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 15	250	6,1	750	12,5+0,1
	x =	4,25							700	12,5+0,3
ca. 40 (5)	11,5	770-780					250	**		
	4,0	795-815					260-320 = 2,0		mm	
	955	0.3-1.7								

** Set idle-speed auxiliary spring at 2,0 mm control-rod travel, then 1/2 turn back.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop: Test oil temp. 40°C (104°F) rev/min 1	(2) Full-load stop: cm³/1000 strokes 2	(6) Rotational-speed limitat.: Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	(3a) Fuel delivery characteristics: cm³/1000 strokes 5	Starting fuel delivery Idle: rev/min 6	Starting fuel delivery Idle: cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	(5a) Idle stop: Control rod travel mm 9
750	98,5 - 100,5 (96,5 - 102,5)	770-780*	-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

H22

(1A)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 DAF 6,2 i 1
3. Edition

En

PE 6 A 90 D 320 RS 2547 RSV 250-1200 A5B 779 R

supersedes 8.82
company: DAF
engine: DT 615

Komb.-Nr. 0 400 676 141
See service Information VDT-I-DAF 004

Specifications apply to test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,2-2,3 (2,15-2,35) mm (from BDC) RW 9 / /

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,8+0,1	7,1 - 7,2	0,3(0,45)			
250	5,9-6,1	0,8 - 1,2	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.22	250	5,5	1000	10,8-10,9
	x	= 3,25							400	10,8-11,0
							250	5,9-6,1	300	11,0-11,5
ca.54 (3)	9,8	1240-1250					330-390=2.0			
	4,0	1280-1310								
	1450	0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle: rev/mn 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 70,5 - 71,5 (68,5 - 73,5)	1240-1250*	LDA 600	0 bar 50,0 - 51,0 (48,0 - 53,0)	100	133,0-143,0 / 19,5 - 21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

Port closing difference between control-rod travel 9 mm and 21 mm and max. = 2,5-3,5° camshaft.

3.83

H23

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 1000 rev/min decreasing / increasing pressure – in bar gauge pressure
XXXXXXX

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
.. RS 2547 + RSV .. A5B 779 R	0,7 bar		10,8 - 10,9
		0,25	10,6 - 10,7
		0,21	10,1 - 10,4
		0	9,8 - 10,0

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 5,7 q 2

10. Edition

En

PES 6 A 90 D 410 RS 2293 RSV 350-1300 A0B 783 L

Komb.-Nr. 0 400 876 255

supersedes 11.82
company Daimler-Benz
engine OM 352 A
110 kW (150 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-1,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	11,4+0,1	7,6-7,7	0,3(0,45)			
350	7,3-7,5	1,0-1,4	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 0,3-1,0 x = 3,5		-	-	-	loose	350	7,4	1300	11,4-11,5
							100	min. 19,0	800	11,7-11,8
							350	7,3-7,5	1050	11,5-11,7
ca. 62 (2a)	10,0 1340-1350 4,0 1460-1490 1600 0,3-1,7						570-630=2,0			

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery charactenstics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1300	0,7 bar 75,5-76,5 (73,5-78,5)	1340-1350*	LDA 500	0,7 bar 62,0-64,0 (59,5-66,5)	100	78,0-88,0 (75,0-91,0)	-	-
LDA 800	0,7 bar 67,0-69,0 (64,5-71,5)		LDA 500	0 bar 50,0-52,0 (47,5-54,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PES 6 A .. RS 2293 +RSV..AOB 783 L	0,7	0 0,39 0,22	11,7-11,8 10,5-10,6 11,4-11,5 10,7-10,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testing the hydraulic start-locking device

Locking at 0.4 - 0.5 bar
Unlocking at 0.15- 0.25bar

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 UNI 13,8 b

1. Edition

En

PE 6 P 120 A 720 RS 214 RQV 425-1100 PA 438-2

Komb.-Nr. 0 401 846 486

supersedes

company Unic-IVECO

engine. 8215.02.542

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Tastoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	9,5-9,6	16,7-17,0	0,5(0,9)			
425	5,5-5,7	1,5-2,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1130	15,2-17,8	-	-	-	ca. 11	100 425	min. 7,1 5,5-5,7	400 630 870 1100	0,3-0,7 4,3-5,0 6,2-6,5 8,2
ca. 59	8,5 4,0 1350	1140-1150 1210-1240 0-1,0				425-525 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1100	167,0-170,0 (164,0-173,0)	1140-1150*	-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.83

BOSCH Geschäftsbereich KH, Kundendienst Kfz-Ausrüstung.
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J3

J3

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 11,0 i 1
2. Edition
En

Testoil-ISO 4113

PE 6 P 110 A 320 LS 3805 RQV 300-1150 PA 524-6

supersedes 7.82
company: Daimler-Benz
engine: OM 421
148 kW (201 PS)

1 - 6 - 3 - 5 - 2 - 4
0 -75 -120-195-240-315° ± 0,5° (± 0,75°)

Komb.-Nr. 0 401 846 756

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 (3,95-4,15) mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,6+0,1	12,7 - 12,9	0,4(0,8)			
300	8,5-8,7	1,6 - 2,2	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 19	100	min.10,0	250	1,0-1,2
							300	8,3-8,5	550	3,4-3,7
ca. 65	11,6	1190-1200							850	4,9-5,3
	4,0	1240-1270				330-740			1150	7,6
	1500	0 - 1,0								
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1150	127,0-129,0 (124,0-132,0)	1190-1200 *	600	116,0-120,0 (114,0-124,0)	100	130,0-150,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.83

J4

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung.

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 PEN 7,0 c 2

1. Edition

En

PE 6 P 100 A 320 RS 291 Z RSV 200-1000 P 1/305 R

Komb.-Nr. 0 401 876 218

supersedes

company Volvo-Penta

engine TD 70 B

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	10,8±0,1	10,5-10,7	0,4(0,8)			
225	5,8-6,0	1,0-1,4	0,2(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 x =	0,3-1,0	-	-	-	ca. 24	225	5,9	-	-
ca. 54 (2a)	9,8 4,0 1150	1040-1050 1090-1120 0,3-1,7					225 280-325	5,8-6,0 =2,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery charactenstics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
700	105,0-107,0 (102,0-110,0)	1040-1050*	-	-	100	210,0-260,0 = 20,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

3.83

J5

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 11,0 q 1

1. Edition

En

PE 6 P 120 A 320 LS 3815 RSV 750-1150 P 1/820 R

supersedes

company Daimler-Benz

engine OM 421 A

184 kW (250 PS)

Komb.-Nr. 0 401 876 722

1- 6- 3 - 5 - 2 - 4

0-75-120-195-240-315° ± 0,5° (± 0,75°)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	11,4+0,1	16,8-17,0	0,5(0,9)			
750	3,5-3,7	1,8-2,4	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 x = 4,0	-	-	-	ca. 30	750	4,2	-	-
							750	4,1-4,3 755-815 = 2,0		
ca. 54 (2a)	10,4	1160-1170								
	4,0	1185-1215								
	1300	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1130	168,0-170,0 (165,0-173,0)	1160-1170*	-	-	100	170,0-190,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 18,3 f

1. Edition

En

PE 10 P 110 A 320 LS 3818 RQ 750 PA 636

Komb.Nr. 0 401 849 708

1 - 8 - 7 - 6 - 3 - 5 - 2 - 10 - 9 - 4

0 -27 -72 -99 -144-171-216-243-288-315° ± 0,5° (± 0,75°)

supersedes –

company: Daimler-Benz

engine: OM 423
197 kW (268 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 (3,95-4,15) mm (from BDC) = RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
730	13,5+0,1	13,4-13,6	0,4(0,8)			
300	8,5-8,7	1,4-2,2	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check (1)		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	12,5 4,0 900	750-755 790-800 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 750-755 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) (2)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/mn 6	Control rod travel cm³/1000 strokes / mm 7
730	134,0-136,0 (131,0-139,0)	-	-	-	100	130,0-150,0

Checking values in brackets

3.83

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung.

J7

PE 6 P 100 A 720 RS 15 RQ 250/1100 PA 43 DR
Komb.-Nr. 0 401 846 186

supersedes 8.82
company: Daimler-Benz
engine: OM 355

Test oil ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 - 2,9 (2,75-2,95) mm (from BDC) 9,0 - 12,0 mm RW

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,4+0,1	11,6 - 11,8	0,3(0,6)			
250	7,9-8,1	1,8 - 2,4	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	12,4 4,0 1350	1145-1160 1200-1230 0 - 1,0	250	8,0	100 250 410-450	min.9,6 7,9-8,1 = 2,0	-	-

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation: At 1145-1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery idle speed ⑥	
rev/min 1	cm³/–1000 strokes 2	rev/min 3	rev/min 4	cm³/–1000 strokes 5	rev/min 6	Control rod travel / cm³/1000 strokes / mm 7
1100	116,0-118,0 (114,0-120,0)	450	450	98,0-102,0 (95,5-104,5)	100	140,0-160,0

Checking values in brackets

4.83

J8

Test Specifications Fuel Injection Pumps and Governors ②

WPP 001/4 MAN 11,1 q 6
3. Edition

En

PES 6 P 120 A 720 LS 388 RQ 250/1100 PA 452

Komb.-Nr. 0 402 046 195

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

supersedes 11.82 MAN
company: D 2566 MK (F)
engine: 235 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0 - 3,1 (2,95-3,15) mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,1+0,1	21,7-22,0	0,5 (0,9)			
250	6,3-6,5	1,1-1,7	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	10,3	1145-1160	250	6,4	100	min.7,9	1100	11,3-11,4
VH =	max. 46°			4,0	1185-1215			250	6,3-6,5	750	13,1-13,2
				1400	0 - 1,0			350-390	= 2,0	865	12,7-12,9
										975	11,7-12,0

Torque-control travel on flyweight assembly dimension a = 0,7 mm

Speed regulation At 1145-1160 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA	1,0 bar	-	LDA	1,0 bar	100	205,0 - 225,0
750	217,0-220,0		650	208,0-213,0		(201,0 - 229,0)
	(214,0-223,0)			(205,0-216,0)		
1100	180,0-185,0		LDA	0,34 bar		
	(177,0-188,0)		500	145,0-150,0		
				(142,0-153,0)		
			LDA	0 bar		
			500	101,0-104,0		
				(98,0-107,0)		

Checking values in brackets

5.83

J9

D. Adjustment Test for Manifold Pressure Compensator

MAN 11,1 q 6

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PES 6 P..LS 388 + RQ..PA 452	1,0	0	13,1 - 13,2
		0,34	9,4 - 9,5
		0,61	10,9 - 11,0
			12,5 - 12,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 SCA 11,0 r 4
4. Edition

En

PE 6 P 110 A 720 RS 3040 RSV 350-1100 P1/481
Komb.-Nr. 0 401 876 720

supersedes: 1.83
company: Scania DS 11
engine: Schlepper

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3-3,4 (3,25-3,45) mm (from BDC) = RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,1+0,1	15,8-16,0	0,6(0,8)			
350	4,4-4,6	1,7-2,1	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 23	350	4,0	-	-
	x =	2,75					100	min. 20,0		
ca. 66 (2a)	12,1	1140-1150					350	4,4-4,6		
	4,0	1220-1250					460-520	= 2,0		
	1350	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1100	158,0-160,0 (156,0-162,0)	1140-1150*	700	161,5-164,5 (159,0-167,0)	100	240,0-290,0 = RW 20,0-21,0 mm	-	-
					350	17,0-21,0		

Checking values in brackets

* 1 mm less control rod travel than col 2

6.83

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

J11

JAA

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 PEN 6,0 e
2. Edition

En

PES 6 MW 100/320 RS 1004 RSV 325-1250 MW/308
0 403 476 011

superseded 4.82
company Volvo/Penta
engine TD 60 D
118 kW (160 PS)

1 - 5 - 3 - 6 - 2 - 4
0 -60 -120-180-240-300 ± 0,50 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC) RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,9+0,1	8,1 - 8,3	0,35(0,6)			
325	4,7-4,9	0,95-1,35	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 0,3-1,0 x = 4,0					ca. 26	325	4,3	350	11,5+0,1
							325	4,7-4,9	500	11,2-0,1
ca. 51 (2a)	1290-1330 = 9,0 1335-1365 = 4,0 1450 = 0,3 - 1,7						450-510 = 2,0		1250	10,9+0,1

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1000	81,0-83,0 (79,0-85,0)	1290-1300*			100	min. 140	325	4,8
					325	9,5-13,5 7,0-16,0		

Checking values in brackets

* 1 mm less control rod travel than col 2

5.83

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung.

J12

Test Specifications Fuel Injection Pumps and Governors

(1A)

WPP 001/4 RVI 5,5 a

1. Edition

En

PES 6 MW 80/320 RS 1104
RSV 300-1450 MW 2/801
0 403 476 013

supersedes
company RVI
engine MD 060212
98 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,75-1,85 (1,70-1,90) mm (from BDC) RW 9,0-12,0

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1450	10,2+0,1	5,85-5,95	0,25 (0,4			
300	7,2-7,4	0,85-1,15	0,20(0,35)			
800	11,6-11,7		0,35(0,45)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca. 20	300	6,7-6,8	800	11,6+0,1
	X = 4						300	7,2-7,3	1300	10,2+0,1
ca. 57 (2a)	1490-1500 = 9,2 1540-1570 = 4,0 1700 = 0,3-1,7						100 430-490	min. 19,0 = 2,0	1450	10,2+0,1

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) idle stop: rev/min 8	Control rod travel mm 9
1450	58,5-59,5 (57,0-61,0)	1490-1500*	800	56,0-58,0 (54,0-60,0)	100	65,0-75,0 (62,0-78,0)	300	7,2-7,4
					300	8,5-11,5 (7,0-13,0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

5.83

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

J13

J13

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 VOL 6,0 r
1. Edition

En

PES 6 MW 100/320 RS 1111
RSV 325-1400 MW 2 A 314
0 403 476 016

supersedes -
company Volvo
engine TAMD 60 C
184 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,10-3,20 (3,05-3,25) mm (from BDC) RW 9,0-12,0

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	13,0-0,1	12,1-12,3	0,35 (0,6)			
325	5,6-5,7	0,95-1,35	0,35(0,55)			
1400	13,0+0,1		0,5 (0,7)			
1000	10,5+0,1					

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 0,3-1,0			ca.22	325	5,1-5,2	350	13,5+0,1
	X = 2,75				325	5,6-5,7	500	13,0+0,1
ca. 60 (2a)	1440-1450 = 12,0				100	min. 19,0		
	1505-1535 = 4,0							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle: rev/min 6	cm³/1000 strokes (5) 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,8 bar	1440-1450 *	LDA	0,8 bar	100	19,0-21,0 mm RW	325	5,6-5,7
1000	121,0-123,0 (119,0-125,0)		1400	119,0-123,0 (117,0-125,0)	325	9,5-13,5 (7,0-16,0)		
			LDA	0 bar				
			1000	83,0-85,0 (81,0-87,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

5.83

J14

J14

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel – diminution difference mm (1)
RS 1111 + S RSV... 314	0,8 bar	0 bar 0,48 bar 0,18 bar	13,0-13,1 10,5-10,6 12,4-12,5 11,1-11,2

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

J15

En JA5

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 18,3 e
2. Edition
En

PE 10 P 120 A 320 LS 3824 RQ 300/1050 PA 656
1- 8- 7- 6 - 3 - 5 - 2 - 10 - 9 - 4
0-27-72-99 -144-171-216-243 -288-315° ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

supersedes 10.82
company: Daimler-Benz
engine: OM 423 LA
346 kW (470 PS)
Euclid
Komb.-Nr.
0 401 849 707

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 (3,95-4,15) mm (from BDC) Zyl. 10

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm³/100 strokes	cm³/100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1050	11,3+0,1	17,7-17,9	0,5 (0,8)			
300	5,0-5,2	1,6-2,2	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600 VH =	19,2-20,8 max. 46°	600	20,0	10,3 4,0 1300	1095-1110 1165-1195 0-1,0	300	4,3	100 300 335-375	min. 5,8 4,2 - 4,4 = 2,0	-	-

Torque-control travel on flyweight assembly dimension a = 0 mm
Speed regulation: At 1095-1110 min⁻¹
1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm³/–1000 strokes	rev/min	rev/min	cm³/–1000 strokes	rev/min	cm³/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
LDA 1050	0,9 bar 177,0-179,0 (174,0-182,0)	-	LDA 600	0,9 bar 173,0-179,0 (170,0-182,0)	100	150,0-170,0
			LDA 500	0 bar 141,0-143,0 (138,0-146,0)		

Checking values in brackets

3.83

J16

J16

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 10 P..LS 3824 + RQ..PA 656	0,90		11,3 - 11,4
		0	10,2 - 10,4
		0,41	10,9 - 11,1
		0,35	10,5 - 10,6

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

J17

En J17

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 14,6 g
4. Edition
En

PE 8 P 120 A 320 LS 3807 RQ 300/1150 PA 546

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45° ±0,5° (±0,75°)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067. --- ---

supersedes 4.83
company: Daimler-Benz
engine: OM 422 A
243 kW (330 PS)

Komb.-Nr. 0 401 848 733

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers.

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,7±0,1	15,6-15,8	0,5(0,9)			
300	5,2-5,4	1,2-1,8	0,8(1,2)			
750/500	----	C, 4 u. 5	0,7(1,1)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
600	19,2-20,8	600	20,0	9,7	1200-1215	300	4,5	100	min.6,0	1150	10,7-10,8
				4,0	1235-1270			300	4,4-4,6	750	11,0-11,3
VH = max. 46°								340-380 = 2,0		900	10,9-11,3

Torque-control travel on flyweight assembly dimension a = 0,2 mm

Speed regulation: At 1200-1215 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel mm / cm³/1000 strokes 7
LDA 1150	0,7 bar 156,0-158,0 (153,0-161,0)	-	LDA 750	0,7 bar 172,0-174,0 (169,0-177,0)	100	140,0-160,0 (136,0-164,0
			LDA 500	0 bar 135,0-137,0 (132,0-140,0)		

Checking values in brackets

J18

J18

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 8 P..LS 3807 mit ..PA 546	0,47	0 0,40	10,9-11,3 10,2-10,4 10,3-10,6

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

J19

n J19

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MAN 11,4 c

1. Edition

En

PES 6 P 120 A 720 LS 457 RQ 750 PA 566

supersedes

company: MAN

engine: D 2566 MLE 198 kW

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Zyl. 6 = RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,5+0,1	20,2-20,4	0,5(0,8)			
250	6,1-6,3	1,5-2,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check (1)		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	11,5 4,0 900	750-755 775-785 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 750-755 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) (2)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
700	202,0-204,0 (199,0-207,0)	-	-	-	100	19,5-21,0 mm RW

Checking values in brackets

2.83

J20

PE 10 P 120 A 520/5 LS 850 RQ 750 PA 404-2

1- 8- 7- 6- 3 - 5 - 2 - 10- 9 - 4

0-27-72-99-144-171-216-243-288-315° ±0,50 (±0,75°)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

supersedes

company: MAN

engine: D 2540 MLE
283 kW

Komb.-Nr.
0 401 849 164

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Zyl. 10

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,8+0,1	19,1-19,4	0,5(0,9)			
250	6,6-6,9	2,2-2,6	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	10,8 4,0 900	750-755 780-790 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = - mm

Speed regulation: At 750-755 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	cm³/1000 strokes / Control rod travel mm 7
700	191,0-194,0 (188,0-197,0)	-	-	-	100	19,5-21,0 mm RW

Checking values in brackets

2.83

Geschäftsbereich KH Kundendienst Kfz Ausrüstung
Printed by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1, Printed in the Federal Republic of Germany

PE 12 P 120 A 320 LS 3819 RQ 900 PA 634

supersedes –
company: Daimler-Benz
engine: OM 424 A
374 kW

1 - 5 - 9 - 8 - 3 - 4 - 11- 10- 2 - 6 - 7 - 12
0 -15 -60 -75 -120-135-180-195-240-255-300-315° ± 0,5°(± 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

Komb.-Nr.
0 401 840 704

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers.

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 (3,95-4,15) mm (from BDC) Zyl. 12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,0+0,1	17,9-18,1	0,5 (0,9)			
300	4,8-5,0	1,2-2,0	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ① Control rod travel rev/min 1	mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
-	-	-	-	10,8 4,0 1050	900-905 935-945 max. 1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 900 - 905 min^{-1} 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel / cm³/1000 strokes / mm 7
850	179,0-181,0 (176,0-184,0)	-	-	-	100	180,0-200,0

Checking values in brackets

3.83

J22

Test Specifications Fuel Injection Pumps and Governors ②

WPP 001/4 MB 11,4 i
4. Edition
En

Testoil-ISO 4113

PES 6 P 120 A 820 LS 3077 RQ 300/1100 PA 585
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

supersedes 11.81
company Daimler-Benz
engine OM 407 LA
235 kW (320 PS)

Komb.-Nr. 0 402 046 722

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,4+0,1	21,2 - 21,4	0,5 (0,9			
300	5,5-5,7	1,4 - 2,0	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	19,2-20,8	650	20,0	12,4 4,0	1145-1160 1200-1230	300	4,9	100 300 370-410	min.6,5 4,8-5,0 =2,0 mm	-	-

1145-1160 min⁻¹

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA 1100	0,70 bar 212,0 - 214,0 (209,0 - 217,0)	-	LDA 600 LDA 500	0,70 bar 205,0 - 211,0 (202,0 - 214,0) 0 bar 146,0 - 148,0 (143,0 - 151,0)	100	170,0 - 190,0

Checking values in brackets

3.83

BOSCH Geschäftsbereich KH Kfz-Ausrüstung
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J23

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PE 6 P .. LS 3077 + .. PA 585	0,70	0 0,42 0,31	13,4-13,5 10,7-10,8 12,6-12,7 11,4-11,5

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

② # Test Specifications Fuel Injection Pumps ② and Governors

En

WPP 00 1/4 MB 21,9a

3. Edition 1.

supersedes 6.82

company: Daimler-Benz

engine: OM 424 A
330 kW (449 PS)
Generator

Komb.-Nr. 0 401 840 705

Testoil-ISO 4113

PE 12 P 120 A 320 LS 3819 RQ 750 PA 635

1- 5- 9- 8- 3- 4- 11- 10- 2- 6- 7- 12
0-15-60-75-120-135-180-195-240-255-300-315° ±0,5° (±0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 087.

All specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 (3,95-4,15) mm (from BDC) Zyl. 12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,9+0,1	19,3 - 19,5	0,5(0,8)			
300	4,8-5,0	1,4 - 2,0	0,8(0,7)			

Adjust the fuel delivery from each outlet according to the values in ▭.

B. Governor Settings

Checking of slider, PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation, Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation, Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
-	-	-	-	10,9 4,0	750-755 780-790	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation: At 750-755 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/1000 strokes 5	Starting fuel delivery, Idle speed ⑥ rev/min 6	cm³/1000 strokes / Control rod travel mm 7
700	193,0 - 195,0 (190,0 - 198,0)		-	-	100	180,0 - 200,0

Checking values in brackets

3.33

K1

BOSCH

K1

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 KHD 15,8 g
3. Edition
En

PE10P110A920/5 LS 3073 RQ300/1150PA535
Komb.-Nr. 0 401 849 702
1-10- 9 - 4 - 3 - 6 - 5 - 8 - 7 - 2
0-27-72-99-144-171-216-243-288-315° ±0,5° (±0,75°)

supersedes 1.83
company BF10L413F
engine 265kW (360 PS) / 2050 min-1 bzw.259 kW (352 PS) / 2300 min-1 (Maxidyne)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8-2,9 (2,75-2,95) mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm³/100 strokes	cm³/ 100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
800	11,6+0,1	13,8-14,0	0,4(0,8)			
300	6,9-7,1	1,8-2,4	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
700	19,2-20,9	700	20,0	9,7	1195-1205	300	7,0	100	min.8,5	1150	10,7-10,9
				4,0	1220-1250			300	6,9-7,1	800	11,6-11,7
VH=	max.46									1020	11,5-11,7
				1350	0-1,0			340-380	=2,0	1050	11,2-11,4

Torque-control travel on flyweight assembly dimension a = mm Speed regulation At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm³/-1000 strokes	rev/min	rev/min	cm³/-1000 strokes	rev/min	cm³/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
LDA 800	0,9 bar 138,0-140,0 (135,0-143,0)		LDA 500	0 bar 85,0-89,0 (82,0-92,0)	100	115,0-140,0

Checking values in brackets

5.83

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PE10P..LS3073 + .. PA535	0,55	0,90	11,2-11,3 11,6-11,7
		0	9,4-9,5
		0,39	10,1-10,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

K3

En K3

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 SCA 8,0 e 2
4. Edition

En

PE 6 P 110 A 720 RS 393 RSV 350-1200 P 1/462 R
Komb.-Nr. 0 401 876 240

supersedes 12.82
company Scania
engine D 8

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC)

Pump speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
600	12,0+0,1	8,7-8,9	0,5(0,8)			2,5 ±0,1
350	7,3-7,5	1,5-1,9	0,2(0,4)			(2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.31	350	6,5	-	-
	x =	4,0								
							350	6,9-7,1		
ca.71	11,0	1240-1250					595 -	655=2,0mm		
(2a)	4,0	1300-1330								
	1450	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop: Test oil temp 40 C (104 F) rev/min 1	cm³/1000 strokes 2	(6) Rotational speed limitat: Note changed to rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) id stop: rev/min 8	Control rod travel mm 9
600	37,0-89,0 (85,0-91,0)	1240-1250*	1200	99,5-102,5 (97,0-105,0)	100	150-200 = 20,0-21,0 mmRW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

6.83

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1980 by Robert Bosch GmbH. Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

K4

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 SCA 11,0 s 1

3. Edition

En

PE 6 P 110 A 720 RS 3065 RSV 350-1100 P1/481

Komb.-Nr. 0 401 876 719

supersedes 10.81
company Saab-Scania
engine DN 11 01

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3-3,4 (3,25-3,45) mm (from BDC) RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1100	12,5+0,1	13,5-13,7	0,5(0,8)			2,5± 0,1 (2,2-2,9)
350	6,2-6,4	1,5-1,9	(0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.20	350	5,5	-	-
	x =	3,25					100	min.20,0		
ca.66	1140 - 1150=11,5						350	5,9-6,1		
(2a)	1210 - 1240= 4,0						490-	550=2,0		
	1350 = 0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40 C (104 F): rev/min 1	cm³/1000 strokes 2	(6) Rotational speed limitat, Note changed to rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1100	135,0-137,0 (133,0-139,0)	1140-1150*	600	132,5-135,5 (130,0-138,0)	100	190,0-240,0 bei 20,0-21,0mm RW		

Checking values in brackets

* 1 mm less control rod travel than col 2

6.83

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K5

Test Specifications Distributor-type Fuel-injection Pumps

VE 6/11 F 1800 L 19-7
0 460 416 025

supersedes 12.82
company: Volvo
engine: TAMD 40 B (121 kW)

Testoil-ISO 4113

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm ±0,02 (0,04)

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	2,6-3,0	mm		
1.2 Supply pump pressure	1500	6,2-6,8	bar (kgf/cm²)		
1.3 Full-load delivery without charge-air pressure	1500	78,0-79,0	cm³/1000 strokes		3,0(3,5)
Full-load delivery with charge-air pressure	-	-	cm³/1000 strokes		
1.4 Idle speed regulation	400	8,5-12,5	cm³/1000 strokes		3,0(3,5)
1.5 Start	100	min. 60	cm³/1000 strokes		
1.6 Full-load speed regulation	1900	43,5-49,5	cm³/1000 strokes		
1.7 Load-dependent start of delivery	-	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	1750
	mm	0,7-1,5(0,4-1,8)	(2,1-3,5)	3,6-4,4(3,3-4,7)
2.2 Supply pump	n = rev/min	400		1750
	bar (kgf/cm²)	2,3-2,9		7,1-7,7
Overflow delivery	n = rev/min	600		1800
	cm³/10 s	55-138(40-153)		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2130	max. 2,5		
	2050	6,5-12,5(5,0-14,0)		
	1900		(42,0-51,0)	
	1770	72,8-75,8	(71,6-77,0)	
	1500		(75,8-81,2)	
	600	66,5-70,5	(65,1-71,9)	
switch-off				
Idle stop	580	0		
	500	max. 2,0		
	400		(6,0-15,0)	
End stop	120	min. 60		
	220	max. 60		

2.4 Solenoid

max. cut-in voltage xxxx min. 10 V
test voltage xxxxxxxxxx rated voltage 12V.

3. Dimensions

for assembly and adjustment mm

Designation	
K	-
KF	5,9-6,1
MS	0,9-1,1
SVS	max. 2,3
AK	18,7-20,7
B XL	10,9-14.2

Observations

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 REN 2,0 d
2. Edition
En

Testoil-ISO 4113

VE 4/9 F 2200 R 69
0 460 494 055

supersedes 6.82
company: Renault
engine: J 8 S - 702

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/

Pre-stroke setting – mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1400	3,9-4,3	mm	0,74	
1.2 Supply pump pressure	1400	5,1-5,7	bar (kgf/cm²)	0,74	
1.3 Full-load delivery without charge-air pressure	600	32,5-35,5	cm³/1000 strokes	0	2,5
Full-load delivery with charge-air pressure	1400	51,0-52,0	cm³/1000 strokes	0,74	
1.4 Idle speed regulation	350	9,0-13,0	cm³/1000 strokes	0	2,5
1.5 Start	100	min. 60,0	cm³/1000 strokes	0	
1.6 Full-load speed regulation	2400	23,0-29,0	cm³/1000 strokes	0,74	
1.7 Load-dependent start of delivery	–	–			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1400	1800	2000
	mm	1,8-2,6(1,5-2,9)	(3,4-4,8)	5,6-6,4(5,3-6,7)	6,2-7,0(5,9-7,8)
2.2 Supply pump	n = rev/min	400		1800	
	bar (kgf/cm²)	1,9-2,5		6,3-6,9	
Overflow delivery	n = rev/min	500			2200
	cm³/10 s	55-138(40-153)			55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press bar (kgf/cm²)
End stop	2700	max. 2,0		0,74
	2500	max.17,5		0,74
	2400		(22,0-30,0)	0,74
	2200	43,0-46,0	(42,2-46,8)	0,74
	2000	44,0-46,0	(42,7-47,3)	0,74
	1400		(49,2-53,8)	0,74
	1000	45,5-48,5	(44,7-49,3)	0,74
	700	37,5-40,5	(36,7-41,3)	0,2
	600		(31,0-37,0)	0
switch-off	2200			
Idle stop	480	max. 2,0		
	375	4,0-8,0	(2,0-10,0)	
	350		(7,0-15,0)	
End stop	180	min. 40		
	300	max. 40		

2.4 Solenoid — max. cut-in voltage xxx min. 10,0 V
xxxxxxxxxxxx rated voltage 12V.

3. Dimensions

for assembly and adjustment mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,4-1,6
SVS	max.5,3
AXK	20,2-22,2
BXL	9,1-12,4

Observations

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3.83

K7

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 STE 6,5d
1. Edition
En

VE 6/12 F1100 R 122
0 460 426 029

supersedes
company Steyr
engine WD 612.87

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/

Testoil-ISO 4113

Pre-stroke setting mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	800	4,8-5,2	mm		
1.2 Supply pump pressure	800	5,8-6,4	bar (kgf/cm²)		
1.3 Full-load delivery without charge-air pressure	1080	80,8-81,8	cm³/1000 strokes		3,5
Full-load delivery with charge-air pressure	-	-	cm³/1000 strokes		
1.4 Idle speed regulation	300	14,0-18,0	cm³/1000 strokes		3,5
1.5 Start	100	min. 95,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1200	11,0-17,0	cm³/1000 strokes		
1.7 Load-dependent start of delivery					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	500	800	1080
	mm	1,3-2,1(1,0-2,4)	(4,3-5,7)	6,9-7,7(6,6-8,0)
2.2 Supply pump	n = rev/min	500		1080
	bar (kgf/cm²)	4,3-4,9		7,2-7,8
Overflow delivery	n = rev/min	500		1100
	cm³/10 s	55-138(40-153)		55-138(40-153

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press bar (kgf/cm²)
End stop	1250	max. 1,0		
	1200		(9,0-19,0)	
	1150	45,5-54,5	(45,0-55,0)	
	1080		(78,0-84,3)	
	800	80,0-82,0	(78,0-84,0)	
	500	78,5-81,5	(76,3-83,7)	
switch-off	1100	0		
Idle stop	450	max. 1,0		
	350	0,5-6,5		
	300		(11,0-21,0)	
End stop	180	min. 100		
	280	max. 75		

2.4 Solenoid
max. cut-in voltage
test voltage

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-6,0
MS	1,3-1,5
SVS	max.6,0
A	
B	

Observations

K8

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 5,8 q 8
En 2. Edition

VA 6/10 H 1150 CR 87-3
0 460 306 260

supersedes 2.83
company IHC
engine D 358

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Testoil-ISO 4113

Pre-stroke setting $\frac{-}{mm}$
Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1 1 Timing device travel	700	2,4-3,2	mm		
1 2 Supply pump pressure	700	4,9-5,4	kp/cm²		
1 3 Full-load delivery without charge-air pressure	700	69,5-70,5	cm³/1000 strokes		3,0
Full-load delivery with charge-air pressure	-	-	cm³/1000 strokes		
1 4 Idle speed regulation	400	16,0-22,0	cm³/1000 strokes		3,0
1 5 Start	100	min. 70,0	cm³/1000 strokes		
1 6 Full-load speed regulation	1200	36,0-44,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2 1 Timing device	rev/min	500	700	1150
	mm	0,6-1,6(0,4-1,8)	(2,1-3,5)	5,2-5,9(4,8-6,2)
2 2 Supply pump	rev/min	200	700	1150
	kp/cm²	2,1-2,6(1,9-2,8)	(4,7-5,6)	6,6-7,1(6,4-7,3)
Overflow delivery	rev/min			
	cm³/10 s			

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1250-1300	0		
		1200		(34,0-46,0)	
		1150	70,0-73,0	(69,0-74,0)	
		700		(69,0-71,0)	
		500	66,0-70,0	(65,0-71,0)	
	Stop	1150	0		
Idle stop	Full	530-580	0		
		400		(14,0-24,0)	
	Start	100	min.70,0		

K9

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4°$ $\beta = 42 \pm 8°$ $\gamma = 30 - 8°$ $\delta = 60 + 8°$	Pump Dimension IV = 3,8 Dimension V = 24,65 mm

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 3,0 o 2
1.Edition
En

PES 5 M 55 C 320 RS 108-1
RSF 350/2300 M 16
Komb. Nr. 0 400 075 987 Sales model 0 400 075 988

supersedes –
company Daimler Benz
engine OM 617
65 KW (88 PS)

1 - 2 - 4 - 5 - 3
0 - 72-144-216-288 ± 0,50 (0,75)
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,20-2,30 (2,15-2,35) mm (from BDC) 20 mm Control rod travel

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	13,9$^{+0,1}$	3,9 - 4,0	0,25 (0,3)			
350	6,5-6,7	0,6 - 0,7	0,1 (0,15)			
1800			0,25 (0,3)			
2200			0,25 (0,3)			

Set uniform delivery according to the values in ☐. Checking values in brackets

B. Governor Settings

Lower rated speed: Degree of deflection of control lever 1		Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4		Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel: Rotational speed rev/min 8	Control rod travel mm 9
9-13	①	min.10,5	250	50	⑦	13,0-13,2	2200	⑫ 100	min. 20,3
	②	max.10,0	300		⑧	9,1-9,5	2500	⑬ 1800	13,5-13,7
	③	6,5-6,7	350		⑨	-	-	⑭ 1000	13,9-14,0
	④	**	385		⑩	0-1,0	2950		
	⑤	-	-		⑪			⑥ Switching point	
		2,5	780-820						

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery ⑲ Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation ⑧a rev/min 3	Variations in fuel delivery ⑰ ⑱ rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8	
2200	39,5-41,5 (38,5-42,5)	2500* RW 9,1-9,5	1800	39,0-41,0 (38,0-42,0)	100	min. 53,0	6,0	⑫a
			1000	39,0-40,0 (38,0-41,0)	350	6,0-7,0 (5,5-9,0)	1,0 1,5	See ⑮ 8 a
					2500	23,0-27,0 (22,0-28,0)	2,5 3,0	⑯

Checking values in brackets ca. 4,0xxxx control rod travel max. column 2

5.83

K11

1. ** Set the idle auxiliary spring at n = 385 min^{-1} so that the control-rod travel is exceeded by 0.1 - 0.2 mm.

2. Setting the idle control-lever position:

   At 1000 min^{-1}, control rod travel 1.9 - 2.0 mm

3. Check the idle auxiliary spring shutoff

   Control-lever position 47°. After change-over point up to 550 min^{-1} no change in control-rod travel. Control-lever position 30°. Speed range 350 min^{-1} - 450 min^{-1}

4. Check the pneumatic shutoff box

   Control lever at idle stop.
   At n = 375 min^{-1} and pu = 450 mbar (vacuum) (338 mmHg) the control rod must return quickly to control-rod travel = 0 mm.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 3,0 o 1
1. Edition
En

PES 5 M 55 C 320 RS 108-1
RSF 350/2300 M 15
Komb. Nr. 0 400 075 991 Sales model 0 400 075 989

supersedes –
company Daimler-Benz
engine OM 617 (65 KW)

1 - 2 - 4 - 5 - 3
0 - 72-144-216-288

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,20-2,30° (2,15-2,35) mm (from BDC) 20 mm Control rod travel

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm³/100 strokes	cm³/100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1000	13,9$^{+0,1}$	3,9 - 4,0	0,25 (0,3)			
350	6,5-6,7	0,6 - 0,7	0,1 (0,15)			
1800			0,25 (0,3)			
2200			0,25 (0,3)			

Set uniform delivery according to the values in [ ]. Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel
	mm	rev/min		mm	rev/min		rev/min	mm
1	2	3	4	5	6	7	8	9
9-13 ①	min. 10,5	250	50 ⑦	13,0-13,2	2200	⑫	100	min. 20,3
②	max. 10,0	300	⑧	9,1-9,5	2500	⑬	1800	13,5-13,7
③	6,5-6,7	350	⑨	-	-	⑭	1000	13,9-14,0
④	**	385	⑩	0-1,0	2950			
⑤	-	-	⑪			⑥ Switching point		
	2,5	720-820						

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery ⑲ Test oil temp 40°C (104°F)		Full-load speed regulation ⑧a	Variations in fuel delivery ⑰ ⑱		Starting fuel delivery idle		Difference	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	cm³/1000 strokes	
1	2	3	4	5	6	7	8	
2200	39,5-41,5 (38,5-42,5)	2500* RW=9,1-9,5	1800	39,0-41,0 (38,0-42,0)	100	min. 53,0	6,0	⑫a
			1000	39,0-40,0 (38,0-41,0)	350	6,0-7,0 (5,5-9,0)	1,0 (1,5)	⑮
					2500	23,0-27,0 (22,0-28,0)	2,5	See 8 a ⑯

Checking values in brackets

Cal. max. control rod travel: mm in Column 2

5.83

BOSCH

1. ** Set the idle auxiliary spring at n = 385 min^{-1} so that the control-rod travel is exceeded by 0.1 - 0.2 mm.

2. Setting the idle control-lever position:

   At 1000 min^{-1}, control rod travel 1.9 - 2.0 mm

3. Check the idle auxiliary spring shutoff

   Control-lever position 47°. After change-over point up to 550 min^{-1} no change in control-rod travel. Control-lever position 30°. Speed range 350 min^{-1} - 450 min^{-1}

4. Check the pneumatic shutoff box

   Control lever at idle stop.
   At n = 375 min^{-1} and pu = 450 mbar (vacuum) (338 mmHg) the control rod must return quickly to control-rod travel = 0 mm.

Test Specifications Fuel Injection Pumps and Governors

40

(1A) WPP 001/4 MB 1,8 r 4
1. Edition
En

PES 4 A 50 D 410 RS 1025 RSV 650-1200 A 5 B 729 L

Komb.-Nr. 0 400 474 154

supersedes –
company Daimler-Benz
engine OM 636
34 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 - 1,8 (1,65-1,85) mm (from BDC) RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1180	13,6+0,1	2,9 - 3,0	0,2(0,25)			
650	9,9-10,1	1,1 - 1,2	0,15(0,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	1000 0,3-1,0		-	-	-	ca. 34	650	9,5	1180	13,6-13,7
	x = 4,5						100	min.19,5	400	14,5-15,1
							650	9,9-10,1	500	13,6-13,8
ca. 57 (2a)	12,6	1220-1230					865-925	= 2,0		
	4,0	1365-1395								
	1450	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note. changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1180	29,0 - 30,0 (28,0 - 31,0)	1220-1230*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

4.83

K15

K15

Test Specifications Fuel Injection Pumps and Governors

(1A) WPP 001/4 MWM 6,2 e
1. Edition
En

PES 6 A 90 D 320/3 RS 2660 RSV 325-1500 A 2 B 505 - 2 R

supersedes
company MWM
engine D 226-6

Komb.-Nr. 0 400 866 112

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,95-3,05 (2,90-3,10) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1500	10,5+0,1	9,0 - 9,1	0,3 (0,5)			
325	6,4-6,6	1,1 - 1,7				

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 27	325	6,0	-	-
	x = 5,5						325	6,4-6,6		
ca. 66	9,5	1540-1550					460-520	= 2,0		
(2a)	4,0	1615-1645								
	1780	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop: Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to) rev/min 3	(3a) Fuel delivery charactenstics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5): Idle rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1500	89,5 - 90,5 (87,5 - 92,5)	1540-1550*	-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

4.83

K16

K16

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 17,4 b 1

1. Edition

En

PE 10 P 120 A 520/4 LS 850 RQV 250-1150 PA 647

1- 8- 7- 6 - 3 - 5 - 2 - 10- 9- 4

0-27-72-99 -144-171-216-243-288-315° ±0,5° (±0,75°)

supersedes

company: MAN

engine: D 2540 MLE
405 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,2+0,1	18,5-18,8	0,4(0,9)			
250	6,2-6,4	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 12	100	min.7,8	200	0,6-0,8
							250	6,2-6,4	520	4,9-5,2
ca. 63	10,2	1190-1200							830	6,1-6,4
	4,0	1255-1285					410-470=2,0		1150	7,5
	1400	0-1,0								
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery, Control-rod stop, Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	1,0 bar	1190-1200*	LDA	0 bar	100	205,0-225,0	-	-
1150	185,0-188,0		500	119,0-122,0				
	(182,0-191,0)			(116,0-125,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

2.83

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K17

K17

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PE 10 P..LS 850 +RQV.. PA 647	1,0	0 0,65 0,54	11,2-11,3 9,6-9,7 10,8-10,9 10,0-10,3

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 14,6 o
2. Edition
En

PE 8 P 120 A 320 LS 3816 RQV 350-1150 PA 590
1 - 8 - 7 - 2 - 6 - 3 - 54 je 45° ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

superseded 10.82
company Daimler Benz
engine OM 422 A
243 kW (330 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 (3,95-4,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,0+0,1	15,8-16,0	0,5(0,9)			
350	4,9-5,1	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 10	100	min.6,0	300	0,6-0,9
							350	4,5-4,6	580	3,6-3,8
ca. 63	10,0	1190-1200							870	5,2-5,4
	4,0	1270-1300							1150	7,6
	1400	0 - 1,0				370-480 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1150	0,7 bar 158,0-160,0 (155,0-163,0)	1190-1200*	LDA 600	0,7 bar 166,0-172,0 (163,0-175,0)	100	140,0-160,0	1050	11,0+0,1
							850	11,4+0,1
							750	11,5+0,2
			LDA 500	0 bar 140,0-142,0 (137,0-145,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

3.83

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

K19

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PE 8 P..LS 3816 + ..PA 590	0,47	0,70 0 0,40	11,4-11,5 11,6-11,7 10,5-10,6 10,9-11,0

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 VOL 12,0 d 1
3. Edition
En

PE 6 P 120 A 320 RS 3050 ROV 250-1100 PA 611

supersedes 2 82
company Volvo
engine TD 120 F

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,4-2,5 (2,35-2,55) mm (from BDC) = RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,1+0,1	24,2-24,5	0,5(0,9)			2,5 ±0,1
250	3,8-4,0	2,2-2,6	0,5(0,7)			(2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1180	15,2-17,8	-	-	-	ca. 7	100	min. 5,3	200	0,7-0,9
ca. 65	12,1	1160-1170					250	3,8-4,0	500	4,2-4,8
	4,0	1225-1255					290-350	≈2,0	660-1040	6,4-6,6
	1350	0 - 1,0							1100	7,3
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	1,2 bar	1160-1170*	LDA	0 bar	100	20.0-21,0	-	-
700	241,5-244,5		700	142,5-146,5		mm RW		
	(238,5-247,5)			(139,5-149,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.83

K21

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 6 P ..RS 3050 + RQV.. PA 611	0,67	1,2 0 0,30	12,2-12,3 13,1-13,2 9,2- 9,3 10,5-10,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 d 1
1. Edition
En

PES 6 P 120 A 320 RS 419 RQV 275-1100 PA 495

supersedes

company: RVI
engine: MIDR 062045
206 kW (280 PS)
Komb.-Nr.
0 402 046 249

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 - 2,9 (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,3+0,1	17,7 - 18,1	0,4(0,8)			
275	3,4-3,6	0,5 - 1,1	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 8	100	min.5,0	250	1,0-1,2
							275	3,4-3,6	530	4,0-4,6
ca.64	9,3	1155-1165							820	5,9-6,1
	4,0	1220-1250				280-395			1100	8,1
	1350	0 - 1,0								
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 177,0-181,0 (174,0-184,0	1155-1165*	LDA 700	0,7 bar 163,0-196,0 (160,0-172,0)	100	130,0-150,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

2.83

K23

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D. Adjustment Test for Manifold Pressure Compensator

RVI 8,8 d 1

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel – diminution difference mm (1)
PES 6 P..RS 419 + RQV..PA 495	0,25	0,70	9,7 - 9,8
		0	10,3 - 10,4
		0,20	8,3 - 8,5
			8,8 - 9,0

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 SCA 8,0 1
2. Edition
En
10.82

PE 6 P 110 A 720 RS 3076 RSV 350-1200 P1/462
Komb.-Nr. 0 401 876 721

supersedes
company Scania
engine D S 8

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3-3,4 (3,25-3,45) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	11,9+0,1	12,1-12,3	0,4(0,8)			2,5+0,1 (2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.24	350	4,4	-	-
	X= 4,0						100	min.20,0		
							350	4,8-5,0		
Ca.62 (2a)	10,9	900-905								
	4,0	935-945								
	1450	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full load stop: Test oil temp. 40°C (104 F) rev/min 1	cm³/1000 strokes 2	(6) Rotational speed limitat: Note changed to rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
850	121,0-123,0 (119,0-125,0)	900-905*	-	-	100	190,0-240,0 20,0- 21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

6.33

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L1

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 BET 8,8 a
2. Edition
En

PE 6 P 120 A 320 RS 383 RQV 250-1200 PA 425 R

supersedes 2.82
company: RVI
engine. MIDS 062030
165,5 kW (225 PS)
Komb.-Nr.
0 401 846 404

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 - 2,9 (2,75-2,95) mm (from BDC) = RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	13,9+0,1	14,8 - 15,1	0,5(0,9)			
275	4,7-4,9	0,8 - 1,4	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1240	15,2-17,8	-	-	-	ca. 12 (3a)	100	min.6,3	200	0,2-0,6
							275	4,7-4,9	530	2,9-3,1
ca. 66	12,9	1245-1255							870	4,8-5,0
	4,0	1340-1370							1200	8,0
	1500	0 - 1,0								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a) rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1200	0,7 bar 148,0-151,0 (145,0-154,0)	1245-1255*	LDA 700	0,7 bar 144,0-148,0 (141,0-151,0)	100	120,0-140,0 = RW 19,5 - 21,0 mm	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.83

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L2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 383 + RQV..PA 425 R	0,23	0,70 0 0,19	13,4 - 13,5 13,9 - 14,0 12,2 - 12,3 12,6 - 12,8

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

L3

En L3

Test Specifications Fuel Injection Pumps and Governors (1)

WPP 001/4 BRE 9,6 c
1. Edition

En

PE 6 P 120 A 320 RS 461 RQV 300-1500 PA 500

supersedes
company Breda
ID 32
engine: 243 kW

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

Komb.-Nr.
0 401 846 478

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 (3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1500	10,0+0,1	14,5-14,9	0,5(0,9)			
300	7,1-7,3	1,5-2,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1500	15,2-17,8	-	-	-	ca.14	100 300	min.8,7 7,1-7,3	250 670 1080 1500	1,0-1,2 3,8-4,0 5,9-6,1 8,8
ca. 62	9,0 4,0 1750	1540-1550 1625-1655 0 - 1,0				35-450 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1500	145,0-149,0 (142,0-152,0)	1540-1550*	-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

2.83

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L4

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 BRE 30,8 a

En 1. Edition

PE 8 P 130 A 520/6 LS 450 RQV 300-900 PA 500

1-2-6-3-4-5-7-8 je 45° ±0,5°(±0,75°)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

supersedes -

company Breda

engine: ID 36 N 8 V

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Komb.-Nr.
0 401 838 020

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 (3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	9,2-9,3	16,5-16,8	0,5(0,9)			
300	6,8-7,0	2,2-2,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	990	15,2-17,8	-	-	-	ca.16	100	min.8,4	250	1,0-1,3
							300	6,8-7,0	470	3,8-4,4
ca. 57	8,2	940-950							680	5,6-5,8
	4,0	1000-1030							900	7,6
	1150	0-1,0				300-395 (3a)				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
900	165,0-168,0 (162,0-171,0)	940-950*	-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

2.83

L5

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L5

Test Specifications Fuel Injection Pumps and Governors

(1) WPP 001/4 BRE 9,7 a

1. Edition

En

PE 6 P 120 A 320 RS 460 RQV 300-1500 PA 500

supersedes

company Breda

engine: ID 38
367,5 kW

Komb.-Nr.
0 401 846 477

1- 2- 3 - 4 - 5 - 6
0-45-120-165-240-285 ° ± 0,5 ° (± 0,75 °)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5-3,6 (3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1500	10,0+0,1	14,6-14,9	0,5(0,9)			
300	7,8-8,0	1,4-2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/mn Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1500	15,2-17,8	-	-	-	ca.18	100 300	min.9,4 7,8-8,0	250 670 1080 1500	1,6-1,8 4,0-4,2 6,2-6,4 9,1
ca.63	9,0 4,0 1750	1540-1550 1625-1655 0 - 1,0				335-440 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/mn 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1500	146,0-149,0 (143,0-152,0)	1540-1550*	-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

2.93

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L6

L6

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 BRE 23,1 a
1. Edition

En

PE 6 P 130 A 320/3 LS 449 RQV 300-900 PA 500

supersedes

company Breda
engine: ID 36 N 6 V
225 kW

Komb.-Nr.
0 401 836 022

1 - 6 - 5 - 4 - 3 - 2
0 -75 -120-195-240-315° ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,5 - 3,6 (3,45-3,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	9,2-9,3	16,5-16,8	0,5 (0,9)			
300	6,8-7,0	2,2-2,8	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	990	15,2-17,8	-	-	-	ca. 16	100	min. 8,4	250	1,0-1,3
ca. 57	8,2	940-950					300	6,8 - 7,0	470	3,8-4,4
	4,0	1000-1030							680	5,6-5,8
	1150	0-1,0				300-395			900	7,6
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
900	165,0-168,0 (162,0-171,0)	940-950*	-	-	100	19,5-21,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.83

L7

L7

Test Specifications Fuel Injection Pumps and Governors

① WPP 001/4 MAN 17,4 b 2

1. Edition

En

PE 10 P 120 A 520/4 LS 850 RQV 250-1150 PA 645

supersedes

company MAN

engine: D 2540 MLE
405 kW (551 PS)
0 401 849 165

1- 8- 7- 6- 3 - 5 - 2 - 10- 9 - 4
0-27-72-99-144-171-216-243-288-315° ±0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 3,0-3,1 (2,95-3,15) mm (from BDC) Zyl. 10

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,2+0,1	18,6-18,9	0,5(0,8)			
250	6,1-6,3	1,4-2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1200	15,2-17,8	-		-	ca. 11	100	min. 7,7	200	0,6-0,8
Ca. 63	10,2	1190-1200					250	6,1-6,3	520	4,8-4,9
	4,0	1255-1285					380-440	= 2,0	830	5,9-6,2
	1400	0 - 1,0							1150	7,9
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2) rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a) rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point rev/min 6	cm³/1000 strokes 7	Torque-control travel (5) rev/min 8	Control rod travel mm 9
1150	186,0-189,0 (183,0-192,0)	1190-1200 *	-	-	100	270,0-290,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.83

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L8

L8

Test Specifications Fuel Injection Pumps and Governors

(1) WPP 001/4 FIA 13,8 a 7

1. Edition

En

PE 6 P 120 A 720 RS 167 RQV 225-1100 PA 337 R

supersedes –

company: Fiat

engine: 221 A/8210.02.022
184 kW

Komb.-Nr. 0 401 846 361
0 401 846 454

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 - 2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,7+0,1	16,8 - 17,1	0,5(0,9)			
225	7,5-7,7	1,7 - 2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca.13	100	min.9,1	200	0,7-0,8
							225	7,5-7,7	500	2,7-3,0
ca. 60	9,7	1140-1150							800	4,6-4,9
	4,0	1200-1230				295-410			100	8,0
	1350	0 - 1,0				(3a)				

Torque control travel a = – mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a) rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1100	168,0-171,0 (165,0-174,0	1140-1150*	-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

4.83

L9

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 BAO 15,9 a

1. Edition

En

PES 6 P 130 A 320 RS 3093 RQV 350-900 PA 618

Komb.-Nr. 0 402 046 730

supersedes

company: Baudouin

engine: 6 P 15-SRCE 295 kW

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,2-3,3 (3,15-3,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	11,7+0,1	32,8-33,2	0,5(0,8)			
350	3,9-4,1	20,0-2,6	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	950	15,2-17,8	-	-	-	ca. 22	100	min. 5,5	300	0,7-1,0
							350	3,9-4,1	500	3,1-3,8
ca. 60	10,7	940-950							700	5,5-5,9
	4,0	1000-1030				350-450			900	8,0
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
900	328,0-332,0 (325,0-335,0)	940-950 *	-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

5.83

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

L10

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 8,1c

En 1. Edition

PES 6 MW 90/720 RS 1005
RQV 300-1300 MW 9 DR
0 403 446 107

supersedes
company: Fiat
engine: 8360.05.670
117,7 kW (160 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 5,10-5,20 (5,05-5,25) mm (from BDC) RW = 5,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	11,7+0,2	8,9-9,1	0,3(0,5)			
300	3,8-4,0	0,95-1,35	0,3(0,5)			
800	12,4+0,2	8,9-9,1	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1300	15,2-17,8	-	-	-	ca.21	300	3,8-4,0		
	1480	0-1,0					100	min.7,0		
ca.60°	10,8	1350-1360								
	4,0	1420-1460						350-390=2,0		
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1300	89,0-91,0 (88,0-92,0)	1350-1360*	800	89,0-91,0 (88,0-92,0)	100	20,0-21,0 (min. 130)	900	12,4+0,2
							1200	11,7+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

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L11

Test Specifications Fuel Injection Pumps and Governors

① VDT-WPP 001/4 MAC 11,0 w 1
2. Edition
En

US-PES 6 P 110 A 720 RS 6005 US-RQV 300/600-1050 PA 586-2K supersedes 3.83
Komb.-Nr. 9 400 231 131 PLE-Maß = 0,740" - 0,820" company Mack
Note VDT-I-MAC 002! engine EM 6 - 285
Values only apply to test nozzle-and-holder assembly 0 681 343 009 285 PS
and fuel-injection test tubing 1 680 750 015

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,8 - 2,9 (2,75- 2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	13,4+0,1	21,2 - 21,4	0,4			
300	5,3-5,5	2,0 - 3,0	0,4			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1120	15,2-17,8				ca.20	250	9,8-11,3		
							300	7,9-8,1		
ca.62	12,4	1090-1100					400	3,8-5,2		
	4,0	1185-1215					690-750	= 2,0		
	1240	0 - 1,0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1000	211,5-213,5	1090-1100*	800	213,0-216,0	100	110,0-170,0	1050	13,3+0,1
			600	242,0-245,0			1000	13,4
				PLE			800	13,8+0,1
			800	147,0-155,0			700	14,5+0,1
							600	14,9+0,1
							500	14,9-0,1

Checking values in brackets

* 1 mm less control rod travel than col 2

6.83

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 40,5 a 3

1. Edition

En

PE 8 P 120 A 920/5 RS 293 RS 250/1000 P 1/422 R

supersedes:

company KHD

engine BA 16 M 816

1 - 6 - 4 - 5 - 8 - 3 - 2 - 7

0 - 75-90 -120-210-225-315-345 ° ±0,5° (±0,75°)

Komb.-Nr. 0 401 878 096

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) = RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	14,9+0,1	31,0-31,4 (30,7-31,7)	0,5 (0,9)			
250	6,3-6,5	2,2-2,8	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-		250	6,4	1000	14,9-15,0
	x = 5,0						390-450	=2,0	420	16,2-16,8
									550	14,9-15,0
VHca.58	13,9	1040-1050				150-200				
Fl max. (2a)	4,0	1105-1135								
	1200	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat Note changed to) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5) rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
		1040-1050*	-	-	100	19,5-21,0 mm RW	-	-
	Carry out adjustment on engine							

Checking values in brackets

* 1 mm less control rod travel than col 2

5.83

L13

L13

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 40,5 a 2

1. Edition

PE 8 P 120 A 920/5 RS 293 RSUV 300-750 P 9 A 322 En

supersedes -

1 - 6 - 4 - 5 - 8 - 3 - 2 - 7

0 -75 -90 -120-210-225-315-345° ±0,5° (±0,75°)

company KHD BA 16 M 816

engine Komb.-Nr. 0 401 878 083

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC) = RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	14,9+0,1	29,6-30,0 (29,3-30,3)	0,5 (0,9)			
300	6,1-6,3	2,2-2,6	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 26	300	5,7	750	14,9-15,0
	x = 4,0						300	6,1-6,3	280	16,2-16,8
							325-385	=2,0	400	14,9-15,0
ca. 62 (2a)	13,9	790-800								
	4,0	820-850								
	985	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery charactenstics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
		790-800*			100	19,5-21,0 mm RW		
Carry	out adjustment	on engine						

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps and Governors

40

(1A) WPP 001/4 KHD 40,5 a 1
1. Edition
En

PE 8 P 120 A 920/5 RS 293 RSUV 300-600 P8A 322 R

supersedes –
company KHD
engine: BA 16 M 816

1 - 6 - 4 - 5 - 8 - 3 - 2 - 7
0 - 75- 90-120-210-225-315-345° ±0,5° (±0,75°)

Komb.-Nr. 0 401 878 099

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 - 2,1 (1,95-2,15) mm (from BDC) = RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	14,9+0,1	29,0-29,4 (28,7-29,7)	0,5(0,9)			
300	5,9-6,1	2,1-2,7	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.30	300	5,5	600	14,9-15,0
	x = 4,0						300	5,9-6,1	220	16,2-16,8
ca. 65	13,9	640-650					310-370	= 2,0	350	14,9-15,0
(2a)	4,0	660-690								
	825	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop: Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
		640-650*			100	19,5-21,0 mm RW		
Carry out adjustment on engine								

Checking values in brackets

* 1 mm less control rod travel than col 2

5.83

L15

L15

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 39,7 c

1. Edition

En

PE 12 ZW 160/120 RS 1029/11 RQUV 300-1200 ZWA 51 R
Komb.-Nr. 0 402 430 009
1 - 12- 9 - 4 - 5 - 8 - 11- 2 - 3 - 10- 7 - 6

Replaces –
Firm: MTU
Engine: 331

0 - 45- 60-105-120-165-180-225-240-285-300-345° ± 0,5° (± 0,75°)

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testoil-ISO 4113

A. Fuel-injection-pump settings

Port closing at prestroke 2,5 - 2,6 (2,45-2,65) mm (from BDC) Zyl. 12; control rod in center position

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0+0,1	513,0-523,0	22,0(33,0)	510,0-526,0	
600	9,0-9,1	140,0-160,0	12,0(18,0)	135,0-165,0	
300	9,0-9,1	72,0-92,0	11,0(16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	Upper rated speed: min⁻¹ 2	Upper rated speed: Control-rod travel mm 3	Medium rated speed: Control lever flection degrees 4	Medium rated speed: min⁻¹ 5	Medium rated speed: Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	Lower rated speed: min⁻¹ 8	Lower rated speed: Control-rod travel mm 9	Torque control: min⁻¹ 10	Torque control: Control-rod travel mm 11
ca. 84	1200	18,0-19,0	ca. 27	375	8,0	ca. 21	300	8,0	-	-
	17,0	1205-1225		200	14,3-17,2		200	10,8-14,2		
	4,0	1320-1380		300	10,3-11,8		400	3,9-5,0		
	1400	0 - 2,0		500	2,5-3,7		485-590=0			
				590-720=0						

Torque control travel dimension a = mm

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°) min⁻¹ 1	Full-load delivery cm³/1000 strokes 2	Control rod stop at speed min⁻¹ 3	Fuel-delivery characteristics min⁻¹ 4	Fuel-delivery characteristics cm³/1000 strokes 5	Starting fuel delivery min⁻¹ 6	Starting fuel delivery cm³/1000 strokes 7
Not known. Carry out adjustment on engine.						

Checking values in brackets

5.83

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 26,5 b
1. Edition
En

PE 8 ZW 160/120 RS 1027/11 RQUV 300-1200 ZWA 51 R
Komb.-Nr. 0 402 438 024
1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je 45° ± 0,5°(± 0,75°)

Replaces -
Firm: MTU
Engine 331

Testoil-ISO 4113

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke 2,5 - 2,6 (2,45-2,65) mm (from BDC) 1. 8; control rod in center position

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0+0,1	513,0-523,0	16,0(24,0)	510,0-526,0	
600	9,0-9,1	140,0-160,0	12,0(18,0)	135,0-165,0	
300	9,0-9,1	72,0-92,0	11,0(16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor settings

Upper rated speed: Control lever deflection degrees 1	mm min⁻¹ 2	Control-rod travel mm 3	Medium rated speed: Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Lower rated speed: Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	Torque control: min⁻¹ 10	Control-rod travel mm 11
ca. 84	1200	18,0-18,1	ca. 27	375	8,0	ca. 21	300	8,0	-	-
	17,0	1205-1225		200	14,3-17,2		200	10,8-14,2		
	4,0	1320-1380		300	10,3-11,8		400	3,9-5,0		
	1400	0 - 2,0		500	2,5-3,7		485-590 = 0			
				590-720 = 0						

Torque control travel dimension a = mm

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°): min⁻¹ 1	cm³/1000 strokes 2	Control rod stop at speed: min⁻¹ 3	Fuel-delivery characteristics: min⁻¹ 4	cm³/1000 strokes 5	Starting fuel delivery: min⁻¹ 6	cm³/1000 strokes 7
Not known. Carry out adjustment on engine.						

5.83

Checking values in brackets

L17

L17

BOSCH

Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 39,7 b 1
1. Edition
En

PE 12 ZW 150/120 RS 1010/11 RQUV 300-1200 ZWA 51 R

Replaces –
Firm: MTU
Engine: 12 V 331

1-12- 9- 4 - 5 - 8 - 11- 2 - 3 - 10- 7 - 6
0-45-60-105-120-165-180-225-240-285-300-345° ± 0,5° (±0,75°)

Komb.-Nr. 0 402 430 004

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke 2,5 - 2,6 (2,45-2,65) mm (from BDC) Zyl. 12; control rod in center position

Rotational speed min⁻¹ 1	Control-rod travel mm 2	Fuel delivery Average value cm³/1000 strokes 3	Difference in fuel delivery cm³/1000 strokes 4	Fuel delivery Checking values cm³/1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0+0,1	479,0-507,0	15,0 (22,0)	494,0 - 510,0	
600	9,0-9,1	131,0-151,0	16,0 (24,0)	126,0 - 156,0	
300	9,0-9,1	70,0-90,0	10,0 (15,0)	65,0 - 95,0	

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	min⁻¹ 2	Control-rod travel mm 3	Control lever flection degrees 4	min⁻¹ 5	Control-rod travel mm 6	Control lever deflection degrees 7	min⁻¹ 8	Control-rod travel mm 9	min⁻¹ 10	Control-rod travel mm 11
ca. 85	1200	18,0-21,0	ca. 30	250	12,2-14,6	ca.23	150	14,3-16,1	-	-
	1250	12,2-16,8		375	6,0-7,2		300	7,3-8,6		
	1300	6,4-11,6		500	2,6-3,7		400	2,8-4,3		
	1350	0,4-6,4		600	0,8-2,1		570	0		
	1420	0-2,0		730	0					

Torque control travel dimension a = mm

C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min⁻¹ 1	cm³/1000 strokes 2	min⁻¹ 3	min⁻¹ 4	cm³/1000 strokes 5	min⁻¹ 6	cm³/1000 strokes 7
Not known. Carry out adjustment on engine.						

Checking values in brackets

5.83

L18

BOSCH

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,4 m1
1. Edition
En

PES 4 M 55 c 320 RS 107-1
RSF 375/2250 M 17

Komb.Nr. 0 400 074 956 Sales model 0 400 074 957

supersedes –
company Daimler-Benz
engine OM 616
53 kW (72 PS)

1 - 3 - 4 - 2
0 -90 -180-270

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,20-2,30 (2,15-2,35) mm (from BDC) 20 mm Control rod travel

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	13,9$^{+0,1}$	3,9-4,0	0,25(0,3)			
375	6,5-6,7	0,6-0,7	0,1 (0,15)			
1800			0,25(0,3)			
2200			0,25(0,3)			

Set uniform delivery according to the values in ☐ Checking values in brackets

B. Governor Settings

Lower rated speed: Degree of deflection of control lever 1		Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4		Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel:	Rotational speed rev/min 8	Control rod travel mm 9
9-13	①	min.11,5	250	50	⑦	13,0-13,2	2200	⑫	100	min. 20,3
	②	max.11,0	300		⑧	8,7-9,1	2500	⑬	1800	13,3-13,5
	③	6,5-6,7	375		⑨	-	-	⑭	1000	13,9-14,0
	④	**	400		⑩	0-1,0	2950			
	⑤	-	-		⑪	-	-	⑥	Switching point	-
		2,5	720-820							

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery ⑲ Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation ⑧a rev/min 3	Variations in fuel delivery ⑰ ⑱ rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8	
2200	39,5-41,5 (38,5-42,5)	2500* RW 8,7-9,1	1800	39,0-41,0 (38,0-42,0)	100	min. 53,0	6,0	⑫a
			1000	39,0-40,0 (38,0-41,0)	375	6,0-7,0 (5,5-9,0)	1,0 1,5	See ⑤
					2500	23,0-27,0 (22,0-28,0)	2,5 3,0	8 a ⑯

Checking values in brackets

Ca.: 4,2 xxx

*) Less control rod travel than in Column 2

5.83

L19

1. ** Set the idle auxiliary spring at n = 400 min^{-1} so that the control-rod travel is exceeded by 0.1 - 0.2 mm.

2. Setting the idle control-lever position:

   At 1000 min^{-1}, control rod travel 1.9 - 2.0 mm

3. Check the idle auxiliary spring shutoff

   Control-lever position 47°. After change-over point up to 550 min^{-1} no change in control-rod travel. Control-lever position 30°. Speed range 350 min^{-1} - 450 min^{-1}

4. Check the pneumatic shutoff box

   Control lever at idle stop.
   At n = 375 min^{-1} and pu = 450 mbar (vacuum) (338 mmHg) the control rod must return quickly to control-rod travel = 0 mm.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,4 11
1. Edition
En

PES 4 M 55 C 320 RS 107-1
RSF 375/2250 M 18

Komb.Nr. 0 400 074 961 | Sales model 0 400 074 958

supersedes –
company Daimler Benz
engine OM 616
53 kW (72 PS)

1- 3- 4 - 2
0-90-180-270

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,20-2,30 (2,15-2,35) mm (from BDC) 20 mm Control rod travel

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	13,9+0,1	3,9-4,0	0,25(0,30)			
375	6,5-6,7	0,6-0,7	0,1(0,15)			
1800			0,25(0,3)			
2200			0,25(0,3)			

Set uniform delivery according to the values in ☐ Checking values in brackets

B. Governor Settings

Lower rated speed: Degree of deflection of control lever 1	Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4	Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel: 7	Rotational speed rev/min 8	Control rod travel mm 9
9-13 ①	min.11,5	250	50 ⑦	13,0-13,2	2200	⑫	100	min.20,3
②	max.11,0	300	⑧	8,7-9,1	2500	⑬	1800	13,3-13,5
③	6,5-6,7	375	⑨	-	-	⑭	1000	13,9-14,0
④	**	400	⑩	0 - 1,0	2950			
⑤	-	-	⑪			⑥ Switching point		
	2,5	720-820						

C. Settings for Fuel injection Pump with Governor Mounted

Full-load delivery ⑲ Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation ⑧a rev/min 3	Variations in fuel delivery ⑰ ⑱ rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8	
2200	39,5-41,5 (38,5-42,5)	2500* RW 8,7-9,1	1800	39,0-41,0 (38,0-42,0)	100	min. 53,0	6,0	⑫a
			1000	39,0-40,0 (38,0-41,0)	375	6,0-7,0 (5,5-9,0)	1,0 1,5	⑮
					2500	23,0-27,0 (22,0-28,0)	2,5 See 3,0 8 a	⑯

Checking values in brackets

ca. 4,2 values xxx control rod travel than in Column 2

5.83

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L21

1. ** Set the idle auxiliary spring at n = 400 min^{-1} so that the control-rod travel is exceeded by 0.1 - 0.2 mm.

2. Setting the idle control-lever position:

   At 1000 min^{-1}, control rod travel 1.9 - 2.0 mm

3. Check the idle auxiliary spring shutoff

   Control-lever position 47°. After change-over point up to 550 min^{-1} no change in control-rod travel. Control-lever position 30°. Speed range 350 min^{-1} - 450 min^{-1}

4. Check the pneumatic shutoff box

   Control lever at idle stop.
   At n = 375 min^{-1} and pu = 450 mbar (vacuum) (338 mmHg) the control rod must return quickly to control-rod travel = 0 mm.